An empirical examination of passenger loyalty and its antecedents in the global cruise industry

A thesis
submitted in partial fulfilment
of the requirements for the Degree of
Doctor of Philosophy

at
Lincoln University

by
Ida Yulianti

Lincoln University

2021

Abstract of a thesis submitted in partial fulfilment of the requirements for the Degree of Doctor of Philosophy.

An empirical examination of passenger loyalty and its antecedents in the global cruise industry

by

Ida Yulianti

Cruise ships are an inclusive service as they are responsible for providing transport, accommodation, food, entertainment and recreation for their customers. Cruise ships operate in a competitive tourism marketing environment and they must provide a high level of service quality for their passengers. Research that develops a meticulous and robust cruise service quality model will make a valuable contribution to the cruise industry. In addition, examining the interrelationships among cruise service quality, cruise line image, passenger satisfaction and passenger loyalty is vitally important for cruise ship management to develop effective marketing strategies.

This research uses comprehensive hierarchical modelling to determine the primary dimensions and sub-dimensions of cruise service quality and to examine the interrelationships among the four higher-order constructs: cruise service quality, cruise line image, passenger satisfaction and passenger loyalty. The roles of cruise line image and passenger participation as mediator variable in the modelling framework are also tested. The gender effect on all of the constructs under investigation is also examined.

The data were collected from passengers of medium, large and mega cruise ships that visited Akaroa (New Zealand) and Benoa (Bali, Indonesia) port of calls, during the 2017/2018 and 2018/2019 cruise seasons. Three dyadic interviews and a pre-test were conducted before data collection. Preliminary data analysis, exploratory factor analysis, structural equation modelling and an independent sample t-test are used to analyse the data.

The results reveal that cruise service quality is a multidimensional construct with a hierarchical structure having 10 first-order sub-dimensions, four second-order primary dimensions (interaction quality, physical environment quality, outcome quality and social factors), and one third-order

dimension (cruise service quality). Social factors are the most important primary dimension of cruise service quality, followed by physical environment quality, outcome quality and interaction quality. For the interrelationships among the four higher-order constructs, the results show that cruise service quality and cruise line image are the antecedents of passenger satisfaction and cruise line image and passenger satisfaction are the antecedents of passenger loyalty. The empirical results confirm that cruise line image and passenger participation are mediator variables in the modelling framework. No gender effect on cruise service evaluation was found. An epilogue chapter discusses the possible impacts of COVID-19 on the current results and the development of future cruise service quality models.

Keywords: Cruise Industry, Comprehensive Hierarchical Modelling, Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, Passenger Loyalty, Passenger Participation.

Acknowledgements

In the name of Allah, the Most Gracious and the Most Merciful. Alhamdulillah. I can complete this thesis with the God's blessing.

First and foremost, I gratefully acknowledge financial support from Lincoln University Doctoral Scholarship. I would also like to express my deepest appreciation to my main supervisor, Mr Michael D. Clemes. His guidance, support, comprehensive comments and detailed reviews enabled me to finish this thesis. Similarly, my deepest appreciation goes to my associate supervisor, Associate Professor David Dean who provided valuable advice and comments through all stages of this thesis.

The most sincere appreciation goes to my husband (Mr Fauzan) and my lovely daughter (Farin Latisa) who always gives me love and endless support. Thank you very much for your understanding during this PhD journey. I would also like to express my gratitude to my parents and my parents-in-law for their support and prayer.

Finally, my appreciation goes to Faculty of Economic and Business Brawijaya University, my friends in Lincoln University, my colleagues in Brawijaya University, Indonesian Community and Muslim Community in Canterbury.

Table of Contents

Abstract ..... **ii**

Acknowledgements ..... **iv**

Table of Contents ..... **v**

List of Tables ..... **x**

List of Figures ..... **xii**

Chapter 1 Introduction **1**

1.1 Background to the Research 1
1.2 An Overview of the Cruise Industry 4
1.3 Research Gaps 5
1.3.1 Determining the Dimensionality of Cruise Service Quality using Brady and Cronin's (2001) Hierarchical Service Quality Model as the Framework 6
1.3.2 Analysing the Interrelationships among Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, and Passenger Loyalty 7
1.3.3 Analysing the Mediating Role of Cruise Line Image in the Modelling Framework 7
1.3.4 Analysing the Mediating Role of Passenger Participation in the Modelling Framework 7
1.3.5 Evaluating Different Perceptions between Male and Female Passengers on the Research Constructs 8
1.4 Research Objectives 8
1.5 Research Contributions 9
1.6 Structure of the Thesis 10

Chapter 2 Literature Review **12**

2.1 Introduction 12
2.2 Conceptualisation of Service Quality 12
2.2.1 The Nordic Model 13
2.2.2 The SERVQUAL Model 13
2.2.3 The Three-Component Model 15
2.2.4 The Multilevel Model 15
2.2.5 The Hierarchical Service Quality Model 16
2.3 Prior Research on Cruise Service Quality 18
2.4 Cruise Service Quality Dimensions 19
2.5 Cruise Marketing Outcomes 22
2.5.1 Cruise Line Image / Brand Image 23
2.5.1.1 The Relationship between Cruise Service Quality and Cruise Line Image 24
2.5.2 Passenger Satisfaction / Customer Satisfaction 24
2.5.3 Passenger Loyalty / Customer Loyalty 25
2.5.3.1 The Relationships between Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty 25
2.5.3.2 The Mediating Role of Cruise Line Image in the Marketing Framework 26
2.6 Passenger Participation / Customer Involvement 26
2.6.1 The Mediating Role of Passenger Participation in the Marketing Framework 27
2.7 The Impact of Gender on Service Evaluations 28

2.8 Summary 28

Chapter 3 Conceptual Research Model and Hypotheses Development 29

3.1 Introduction 29

3.2 Model Development 29

3.3 Hypotheses Development 31

3.3.1 Hypotheses Relating to Research Objective 1: The Dimensionality of Cruise Service Quality using Brady and Cronin's (2001) Hierarchical Service Quality Model as the Framework 31

3.3.1.1 The Sub-dimensions of Interaction Quality 31

3.3.1.2 The Sub-dimensions of Physical Environment Quality 31

3.3.1.3 The Sub-dimensions of Outcome Quality 32

3.3.1.4 The Sub-dimensions of Social Factors 32

3.3.2 Hypotheses Relating to Research Objective 2: The Least and Most Important Cruise Service Quality Dimensions 33

3.3.3 Hypotheses Relating to Research Objective 3:The Interrelationships between Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty . 33

3.3.4 Hypotheses Relating to Research Objective 4:The Mediating Effect of Cruise Line Image in the Modelling Framework 34

3.3.5 Hypotheses Relating to Research Objective 5: The Mediating Effect of Passenger Participation in the Modelling Framework 35

3.3.6 Hypotheses Relating to Research Objective 6: Male and Female Passengers' Perceptions of the Research Constructs 35

3.4 Summary 36

Chapter 4 Research Methodology 37

4.1 Introduction 37

4.2 Research Design 37

4.3 Questionnaire Development 38

4.3.1 Construct Operationalisation 38

4.3.1.1 Dyadic Interview Procedures 38

4.3.2 Questionnaire Design 39

4.3.3 Pre-testing Procedure 40

4.3.4 Layout of the Final Draft Questionnaire 40

4.3.4.1 Section A 41

4.3.4.2 Section B 41

4.3.4.3 Section C 42

4.3.4.4 Section D 43

4.3.4.5 Section E 44

4.3.4.6 Section F 44

4.4 Sampling and Data Collection Methods 45

4.4.1 Sample Derivation 45

4.4.2 Sample Size 45

4.4.3 Data Collection Method 46

4.5 Data Analysis Procedure 47

4.5.1 Preliminary Data Analysis 47
4.5.1.1 Missing Data 47
4.5.1.2 Outliers 47
4.5.1.3 Non-Response Bias 48
4.5.1.4 Normality 48
4.5.2 Exploratory Factor Analysis (EFA) 48
4.5.2.1 Step 1: Testing the Appropriateness of the Data Matrix for Factor Analysis . 49
4.5.2.2 Step 2: Selecting Factor Extraction Methods 50
4.5.2.3 Step 3: Determining the Number of Factors to Extract 50
4.5.2.4 Step 4: Performing Factor Rotation 51
4.5.2.5 Step 5: Interpreting the Derived Factors 51
4.5.2.6 Step 6: Testing the Unidimensionality and Reliability 52
4.5.3 Structural Equation Modelling (SEM) 52
4.5.3.1 Measurement Model 53
4.5.3.1.1 Model Specification 54
4.5.3.1.2 Model Identification 55
4.5.3.1.3 Model Fit Indices 55
4.5.3.1.4 Model Modification 56
4.5.3.1.5 Unidimensionality Analysis 57
4.5.3.1.6 Construct Validity 57
4.5.3.2 Structural Model 58
4.5.3.3 Mediating Test 58
4.5.4 Independent Sample T-test Analysis 58
4.6 Summary 59

Chapter 5 Results 60
5.1 Introduction 60
5.2 Usable Responses and Preliminary Data Analysis 60
5.2.1 Missing Data 60
5.2.2 Outliers 60
5.2.3 Non-Response Bias 61
5.2.4 Normality 61
5.3 Respondents' Demographic Characteristics 62
5.4 Data Analysis Interpretation 63
5.4.1 The Exploratory Factor Analysis (EFA) Results for the Four Primary Dimensions 63
5.4.1.1 The EFA Results for Interaction Quality 63
5.4.1.2 The EFA Results for Physical Environment Quality 66
5.4.1.3 The EFA Results for Outcome Quality 67
5.4.1.4 The EFA Results for Social Factors 69
5.4.2 The Confirmatory Factor Analysis (CFA) Results 70
5.4.2.1 The First-Order CFA Results for Primary Dimensions 70
5.4.2.1.1 The First-Order CFA Results for Interaction Quality 71
5.4.2.1.2 The First-Order CFA Results for Physical Environment Quality 73
5.4.2.1.3 The First-Order CFA Results for Outcome Quality 76

5.4.2.1.4 The First-Order CFA Results for Social Factors 77
5.4.2.2 The Second-Order CFA Results for the Primary Dimensions 79
5.4.2.3 The First-Order CFA Results for Cruise Service Quality 82
5.4.2.4 The Second-Order CFA Results for Cruise Service Quality 84
5.4.2.5 The First-Order CFA Results for the Higher-Order Constructs 85
5.4.3 The Structural Model Results 88
5.4.4 The Mediation Analysis Results 90
5.4.4.1 The Result of Mediation Analysis for Cruise Line Image on the Cruise Service Quality – Passenger Satisfaction Relationship 90
5.4.4.2 The Result of Mediation Analysis for Cruise Line Image on the Cruise Service Quality – Passenger Loyalty Relationship 92
5.4.4.3 The Result of Mediation Analysis for Passenger Participation on the Outcome Quality – Cruise Service Quality Relationship 94
5.4.4.4 The Result of Mediation Analysis for Passenger Participation on the Social Factors – Cruise Service Quality Relationship 96
5.4.5 The Independent Sample T-test Results 98
5.5 Summary 100

Chapter 6 Discussion, Implications, Limitations and Recommendations for Future Research 102
6.1 Introduction 102
6.2 Discussion 102
6.2.1 The Dimensionality of Cruise Service Quality and the Least and Most Important Cruise Service Quality Dimensions 102
6.2.1.1 Interaction Quality 103
6.2.1.2 Physical Environment Quality 104
6.2.1.3 Outcome Quality 105
6.2.1.4 Social Factors 106
6.2.2 The Interrelationships among Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty 106
6.2.3 The Mediating Effect of Cruise Line Image in the Modelling Framework 107
6.2.4 The Mediating Effect of Passenger Participation in the Modelling Framework 108
6.2.5 The Effect of Gender on the Research Constructs Evaluation 108
6.3 Research Implications 109
6.3.1 Empirical Implications 109
6.3.2 Managerial Implications 109
6.4 Research Limitations and Recommendations for Future Research 111

Chapter 7 Epilogue 112
7.1 Introduction 112
7.2 The Possibility of Changes to the Model in a Post-COVID-19 Environment 112
7.2.1 The Dimensionality of Cruise Service Quality and the Least and Most Important Cruise Service Quality Dimensions 112
7.2.2 The Interrelationships among Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty 114
7.2.3 The Mediating Effect of Cruise Line Image in the Modelling Framework 114

7.2.4 The Mediating Effect of Passenger Participation in the Modelling Framework 115
7.2.5 The Effect of Gender on the Research Constructs Evaluation 115
References 116
Appendix 1: Questionnaire 137
Appendix 2: Items References 143
Appendix 3: The List of Medium, Large and Mega Cruise Ships 147
Appendix 4: Normality 153
Appendix 5: Exploratory Factor Analysis for Interaction Quality 156
Appendix 6: Exploratory Factor Analysis for Physical Environment Quality 158
Appendix 7: Exploratory Factor Analysis for Outcome Quality 160
Appendix 8: Exploratory Factor Analysis for Social Factors 161

List of Tables

Table 1.1 Global Cruise Passengers (in Millions) 2
Table 4.1 Questionnaire Items for Measuring Interaction Quality 41
Table 4.2 Questionnaire Items for Measuring Physical Environment Quality 42
Table 4.3 Questionnaire Items for Measuring Outcome Quality 43
Table 4.4 Questionnaire Items for Measuring Social Factors 43
Table 4.5 Questionnaire Items for Measuring Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, Passenger Loyalty and Passenger Participation 44
Table 4.6 Guidelines for Assessing the Significance Level of Factor Loadings on Different Sample Sizes 52
Table 5.1 Non-Response Bias Test 61
Table 5.2 Respondents' Demographic Profile 62
Table 5.3 The EFA Results for Interaction Quality (ULS PROMAX Rotation) 65
Table 5.4 The EFA Results for Physical Environment Quality (ULS PROMAX Rotation) 67
Table 5.5 The EFA Results for Outcome Quality (ULS PROMAX Rotation) 69
Table 5.6 The EFA Results for Social Factors (ULS PROMAX Rotation) 70
Table 5.7 The GOF Results of the First-Order CFA Model for Interaction Quality 72
Table 5.8 The Construct Validity of the First-Order CFA Model for Interaction Quality 72
Table 5.9 Squared Multiple Correlation (R^2) of the First-Order CFA Model for Interaction Quality 73
Table 5.10 The GOF Results of the First-Order CFA Model for Physical Environment Quality .. 74
Table 5.11 The GOF Results of the First-Order CFA Modified Model for Physical Environment Quality 74
Table 5.12 The Construct Validity of the First-Order CFA Modified Model for Physical Environment Quality 75
Table 5.13 Squared Multiple Correlation (R^2) of the First-Order CFA Modified Model for Physical Environment Quality 76
Table 5.14 The GOF Results of the First-Order CFA Model for Outcome Quality 77
Table 5.15 The Construct Validity of the First-Order CFA Model for Outcome Quality 77
Table 5.16 The GOF Results of the First-Order CFA Model for Social Factors 78
Table 5.17 The Construct Validity of the First-Order CFA Model for Social Factors 79
Table 5.18 The GOF Results of the Second-Order CFA Model for Primary Dimensions 81
Table 5.19 Standardized Solutions of the Second-Order CFA Model for the Primary Dimensions 81
Table 5.20 Squared Multiple Correlation (R^2) of the Second-Order CFA Model for the Primary Dimensions 81
Table 5.21 The GOF Results of the First-Order CFA Model for Cruise Service Quality 83
Table 5.22 The Construct Validity of the First-Order CFA Model for Cruise Service Quality 83
Table 5.23 The GOF Results of the Second-Order CFA Model for Cruise Service Quality 84
Table 5.24 Standardized Solutions of the Second-Order CFA Model for Cruise Service Quality 85
Table 5.25 The GOF Results of the First-Order CFA Model for the Higher-Order Constructs ... 86
Table 5.26 The Construct Validity of the First-Order CFA Model for the Higher-Order Constructs 87
Table 5.27 Squared Multiple Correlation (R^2) of the First-Order CFA Model for the Higher-Order Constructs 87
Table 5.28 The GOF Results of the Structural Model for the Four Higher-Order Constructs 88
Table 5.29 Standardized Solutions of the Structural Model for the Four Higher-Order Constructs 89
Table 5.30 Standardized Causal Effects of the Structural Model for the Four Higher-Order Constructs and Assessment of Hypotheses 89

Table 5.31 The GOF Results for the Direct Effect of Cruise Service Quality on the Passenger Satisfaction Model 91
Table 5.32 Standardized Causal Effect of Cruise Service Quality on the Passenger Satisfaction 91
Table 5.33 The GOF Results for the Indirect Effect of Cruise Service Quality on the Passenger Satisfaction Model 91
Table 5.34 Standardized Causal Effects among Cruise Service Quality, Cruise Line Image and Passenger Satisfaction 92
Table 5.35 The GOF Results for the Direct Effect of Cruise Service Quality on the Passenger Loyalty Model 93
Table 5.36 Standardized Causal Effect of Cruise Service Quality on the Passenger Loyalty 93
Table 5.37 The GOF Results for the Indirect Effect of Cruise Service Quality on the Passenger Loyalty Model 93
Table 5.38 Standardized Causal Effects among Cruise Service Quality, Cruise Line Image and Passenger Loyalty 94
Table 5.39 The GOF Results for the Direct Effect of Outcome Quality on the Cruise Service Quality Model 95
Table 5.40 Standardized Causal Effect of Outcome Quality on the Cruise Service Quality 95
Table 5.41 The GOF Results for the Indirect Effect of Outcome Quality on the Cruise Service Quality Model 96
Table 5.42 Standardized Causal Effects among Outcome Quality, Passenger Participation and Cruise Service Quality 96
Table 5.43 The GOF Results for the Direct Effect of Social Factors on the Cruise Service Quality Model 97
Table 5.44 Standardized Causal Effect of Social Factors on the Cruise Service Quality 97
Table 5.45 The GOF Results for the Indirect Effect of Social Factors on the Cruise Service Quality Model 98
Table 5.46 Standardized Causal Effects among Social Factors, Passenger Participation and Cruise Service Quality 98
Table 5.47 Independent Sample T-test Results for the Sub-dimensions 99
Table 5.48 Independent Sample T-test Results for the Primary Dimensions 99
Table 5.49 Independent Sample T-test Results for the Higher-Order Constructs 99
Table 5.50 Summary of Hypotheses Testing 100

List of Figures

Figure 2.1 The Nordic Model of Service Quality (Grönroos, 1984) 13
Figure 2.2 The SERVQUAL Model of Service Quality (Parasuraman et al., 1988) 14
Figure 2.3 The Three-Component Model of Service Quality (Rust & Oliver, 1994) 15
Figure 2.4 The Multilevel Model of Service Quality (Dabholkar et al., 1996) 16
Figure 2.5 The Hierarchical Service Quality Model (Brady & Cronin, 2001) 18
Figure 3.1 The Proposed Research Model 30
Figure 5.1 The Scree Plot (Interaction Quality) 64
Figure 5.2 The Scree Plot of 16 Items (Interaction Quality) 65
Figure 5.3 The Scree Plot (Physical Environment Quality) 66
Figure 5.4 The Scree Plot (Outcome Quality) 68
Figure 5.5 The Scree Plot of Six Items (Outcome Quality) 68
Figure 5.6 The Scree Plot (Social Factors) 69
Figure 5.7 The First-Order CFA Model for Interaction Quality 71
Figure 5.8 The First-Order CFA Model for Physical Environment Quality 73
Figure 5.9 The First-Order CFA Modified Model for Physical Environment Quality 75
Figure 5.10 The First-Order CFA Model for Outcome Quality 76
Figure 5.11 The First-Order CFA Model for Social Factors 78
Figure 5.12 The Second-Order CFA Model for the Primary Dimensions 80
Figure 5.13 The First-Order CFA Model for Cruise Service Quality 83
Figure 5.14 The Second-Order CFA Model for Cruise Service Quality 84
Figure 5.15 The First-Order CFA Model for the Higher-Order Constructs 86
Figure 5.16 The Structural Model for the Four Higher-Order Constructs 88
Figure 5.17 The Direct Effect of Cruise Service Quality on the Passenger Satisfaction Model .. 90
Figure 5.18 The Indirect Effect of Cruise Service Quality on the Passenger Satisfaction Model 91
Figure 5.19 The Direct Effect of Cruise Service Quality on the Passenger Loyalty Model 92
Figure 5.20 The Indirect Effect of Cruise Service Quality on the Passenger Loyalty Model 93
Figure 5.21 The Direct Effect of Outcome Quality on the Cruise Service Quality Model 95
Figure 5.22 The Indirect Effect of Outcome Quality on the Cruise Service Quality Model 95
Figure 5.23 The Direct Effect of Social Factors on the Cruise Service Quality Model 97
Figure 5.24 The Indirect Effect of Social Factors on the Cruise Service Quality Model 97

Chapter 1

Introduction

1.1. Background to the Research

Cruise holidays are unique from other types of holidays because they are all-inclusive. Cruise packages normally include transportation, accommodation, food, entertainment and recreation (Dowling, 2006). Consumers perceive a hassle-free vacation and this is a major reason for the growing popularity of cruise holidays (Mancini, 2004). Krieger, Moskowitz and Rabino (2005) have identified some other reasons why customers choose cruise holidays. The reasons include escaping from daily activities, having a romantic break or family time, excellent facilities, and going away for several days.

At the time of writing (July 2021), numerous industries across the world, including the cruise industry, are facing a serious financial crisis because of the COVID-19 pandemic. Government policies of social distancing, working from home and travel restrictions to minimise the spread of the COVID-19 virus have caused the temporary closure of many hotels (Bartik et al., 2020) and the suspension of cruising for most cruise lines (Cruise Critic, 2020). The cruise industry suffered US$ 77 billion loss in 2020 (Cruise Lines International Association, 2021a). Scholars argue that the industry will recover when everyone has access to a vaccine (Gössling, Scott & Hall, 2020).

Before the pandemic, the cruise industry was a strong and successful industry (da Silva, 2021). The industry had prospered from massive growth in both demand and supply. The number of cruise passengers had grown from 500,000 in 1970 (Branchik, 2014), to 7.21 million in 2000 (Cruise Market Watch, 2015), and 29.7 million in 2019 (CLIA, 2021a) (see Table 1.1). Numerous cruise vessels have been launched to meet the growing global demand. In 1985, the Carnival Cruise Line introduced the "Holiday" cruise ship, a vessel that could accommodate 1,500 passengers (Klein, 2006). The capacity of the "Holiday" cruise ship was double the capacity of the largest 1970 cruise ship (Peisley, 1989). Since these early initiatives numerous mega cruise ships with capacities of over 2,000 passengers have been launched (Dowling & Weeden, 2017; Klein, 2006; Mancini, 2004). The three largest cruise vessels in the world, "Symphony of the Seas", "Harmony of the Seas" and "Allure of the Seas" have passenger capacities of 6,680; 5,479 and 5,400, respectively (MI News Network, 2019; U.S. News, 2020).

The growth in demand for cruise holidays increased the global economic impact of the cruising industry and expanded the cruising grounds (oceans, rivers and canals). The global cruise output increased from US$ 117 billion in 2015 to US$ 154.5 billion in 2019 (CLIA, 2016; 2021a). The industry's cruising grounds also expanded into locations all over the world (CLIA, 2019; Dowling & Vasudavan, 2000). Under normal circumstances, cruise passengers could travel around the Caribbean, the Mediterranean, Alaska, South America, Asia, Australasia and the Pacific. At the end of 2019, cruising was the fastest growing industry in the leisure services (Radic et al., 2020).

Table 1.1 Global Cruise Passengers (in Millions)

Year	Total Cruise Passengers	Year	Total Cruise Passengers
1970	0.5	2010	19.1
1980	1.4	2015	23.06
1990	3.77	2016	25.2
1995	4.72	2017	26.7
2000	7.21	2018	28.5
2005	11.18	2019	29.7

Source: Brida and Zapata (2010), CLIA (2021a), Cruise Market Watch (2015)

Cruise ships offer a diverse set of services, packaged as a single cruise holiday, and subsequently they face a greater challenge to deliver consistently high service quality compared with other more limited service providers (Aggett & Lim, 2012). Service quality is the key to gain a competitive advantage in service sector (Armstrong, Adam, Denize & Kotler, 2012; Yoon & Cha, 2020). Scholars have measured cruise service quality (See for example Chua, Lee, Goh & Han, 2015; Forgas-Coll, Palau-Saumell, Sánchez-García, & Caplliure-Giner, 2014; Lobo, 2008; Petrick, 2004; Radic & Lück, 2018), but they have employed problematic service quality models including SERVQUAL and unidimensional models. Parasuraman, Zeithaml and Berry (1988) developed SERVQUAL, a service quality model and measurements that consists of five dimensions: tangibles, reliability, responsiveness, assurance and empathy. However, researchers have failed to confirm the five dimensions of SERVQUAL as a result of problems with the instrument (Babakus & Boller, 1992; Brown, Churchill & Peter, 1993; Cronin & Taylor, 1992; Peitzika, Chatzi & Kissa, 2020). Moreover, marketing scholars have acknowledged service quality is a multidimensional construct with a hierarchical structure (Brady & Cronin, 2001; Channoi, Clemes & Dean, 2018; Clemes, Dean & Thitiya, 2020). In an online survey, Chua et al. (2015) proposed three dimensions to measure cruise service quality. However, they did not employ generally accepted methodology in their data analysis. Therefore, a more robust and effective model for the measurement of cruise service quality is required to accurately measure the construct.

Brady and Cronin (2001) developed a hierarchical service quality model which has been applied to numerous industries, including education (Clemes, Gan & Kao, 2007), sports (Clemes, Brush & Collins, 2011a), motels (Clemes, Gan & Ren, 2011b), airlines (Wu & Cheng, 2013), moderate upscale restaurants (Clemes, Mohi, Li & Hu, 2018), beach resort hotels (Channoi et al., 2018) and day spas (Clemes et al., 2020). The hierarchical model is so named because it consists of three levels: overall, primary dimensions, and sub-dimensions (Brady & Cronin, 2001). There are three primary dimensions in Brady and Cronin's model and each of the primary dimensions has three sub-dimensions. However, the primary and sub-dimensional structures are not universal and are expected to differ across the various types and contexts of services (Clemes, et al., 2018; Dagger, Sweeney & Johnson, 2007). To date, none of the cruise research has applied Brady and Cronin's (2001) hierarchical service quality model.

In addition, service quality has been confirmed as an antecedent of important marketing outcomes, including brand image (Clemes et al., 2018; Hapsari, Clemes & Dean, 2017), customer satisfaction (Başarangil, 2018; Channoi et al., 2018; Suhartanto, Clemes, Februadi, Suhaeni & Loveldy, 2020), and customer loyalty (Nguyen-Phuoc, Su, Tran, Le & Johnson, 2020; Shi, Prentice & He, 2014; Suhartanto, Clemes & Dean, 2013). Brand image encourages positive customer behaviours such as a willingness to pay premium prices, giving positive word of mouth and loyalty (Martenson, 2007). Customer satisfaction has long been considered to be a fundamental goal of cruise companies (Lobo, 2008). Loyal customers exhibit behaviours such as repurchasing, reluctance to switch to competitors, and recommending the service to other potential customers (Aydin & Özer, 2005). The interrelationships among the four higher-order constructs have been tested in various studies (Channoi et al., 2018; Hapsari et al., 2017) but not in studies on the cruise industry. In order to ensure effective cruise marketing strategies, it is essential to understand the interrelationships among cruise service quality, cruise line image, passenger satisfaction and passenger loyalty. The current research utilises comprehensive hierarchical modelling to determine the sub and primary dimensions of cruise service quality, and to examine the interrelationships among the four higher-order constructs. Clemes, Shu and Gan (2014) explain that comprehensive hierarchical modelling enables researchers to determine the sub and primary dimensions of service quality and to analyse the interrelationships among the higher-order constructs simultaneously using the perceptions from a single sample.

Brand image also plays a mediating role in the marketing framework. Much research has confirmed the mediating effect of brand image on service quality – customer satisfaction relationship (Chien & Chi, 2019; Faria & Mendes, 2013) and service quality – customer loyalty relationship (Akroush, Jrasiat, Kurdieh, Al-Faouri & Qatu, 2016; Makanyeza & Chikazhe, 2017). However, there are no empirical studies on these topics in the cruise industry. This research incorporates cruise line image

as the mediating variable in the relationships between cruise service quality – passenger satisfaction and cruise service quality - passenger loyalty.

Customer involvement is another critical aspect of the cruise industry. Lu, Chi and Liu (2015) define customer involvement as customer participation in service activities. There are various on-board activities on a cruise ship which require passenger participation (Gibson & Parkman, 2019). Scholars have reported that service quality dimensions have a positive and significant influence on customer involvement (Alexandris, Douka & Balaska, 2012; Fatima & Razzaque, 2013) and customer involvement has a positive and significant influence on perceived service quality (Chua, Lee & Han, 2017). A higher level of involvement occurs when customers receive positive outcomes from services (Alexandris et al., 2012). Fatima and Razzaque (2013) have also determined a mediating role of customer involvement in the relationship between rapport and satisfaction. As rapport is part of social factors (Jang, Ro & Kim, 2015), it is necessary to examine the mediating role of passenger participation on the relationships between outcome quality – cruise service quality and social factors – cruise service quality.

Finally, Radić, Björk and Kauppinen-Räisänen (2019) suggest that passenger perceptions of cruise service quality and behavioural intentions differ depending on an individual's gender. Therefore, this research examines the perceptual differences between male and female passengers on the research constructs (sub and primary dimensions of cruise service quality, cruise service quality, cruise line image, passenger satisfaction, passenger loyalty, and passenger participation).

The following section provides an overview of the research setting: the cruise industry. This chapter also outlines gaps in the cruise literature, the research's objectives, expected contributions and the structure of the thesis.

1.2. An Overview of the Cruise Industry

While cruising is a relatively recent phenomenon, its origins can be traced back to 1840, when the Britannia, from the Cunard Line, carried 115 passengers from Liverpool to Halifax and Boston (Branchik, 2014; Johnson, 1987). Since then cruise ships have changed dramatically, from a means of transportation to floating resort hotels. Most contemporary cruise ships offer sophisticated facilities, including accommodation, restaurants and bars, sports, shopping, entertainment and communication centres (Dowling, 2006). Today, cruising can be conceptualised as an extended holiday (three days or more) characterised by pure enjoyment on a ship (Department for Transport, 2016). A variety of cruise ships have also emerged which provide distinct experiences for their passengers; these include small cruise ships, mega cruise ships, river cruise ships, ocean cruise ships,

adventure cruise ships, expedition cruise ships, and luxury cruise ships (Wind Rose Network, 2017). Mancini (2004) divides cruise ships into different categories, based on their size:

a. Very small ship: Gross Registered Tonnage (GRT) less than 10,000 and passenger capacity less than 200.
b. Small ship: GRT in the 10,000 – 20,000 range and passenger capacity in the 200 – 500 range.
c. Medium ship: GRT in the 20,000 – 50,000 range and passenger capacity in the 500 – 1,200 range.
d. Large ship: GRT in the 50,000 – 70,000 range and passenger capacity in the 1,200 – 2,000 range.
e. Megaship: GRT more than 70,000 and passenger capacity more than 2,000.

This research concentrates on medium, large and mega cruise ships since the availability of various on-board facilities and activities depends entirely on the size of the ship (Dowling & Vasudavan, 2000). For example, there are no casinos or multiple restaurants on most of the smaller cruise ships (Gladstone, 2019).

The cruise industry enjoyed rapid growth in total revenue during the four decades before the pandemic (Peručić, 2020). This growth benefitted the world economy in many ways. First, the industry generated 1,166,000 jobs, spent US$ 50.53 billion on wages and salaries (CLIA, 2021a), and purchased the goods and services for US$ 72 billion in 2019 (CLIA, 2020). Second, the industry helped increase the destinations' revenue (Whyte, 2018). New Zealand cruise tourism, for instance, made an economic contribution to public finances of NZ$ 491 million in 2018 (m.e. consulting, 2018). Finally, the growth of the cruise industry was beneficial to the transport industry (Cartledge, 2012). A package for a cruise holiday normally includes flights to/from embarkation/disembarkation ports and a shuttle service between the airport and cruise ship at both ends (Papathanassis, 2017). Since 2012, the Singapore Tourism Board (STB) and Changi Airport Group (CAG) have collaborated with many cruise lines (e.g., Costa Cruises and Princess Cruises) to provide a fly-cruise holiday (Singapore Tourism Board, 2014). This collaboration is worth multi-million dollars.

1.3. Research Gaps

According to the current marketing literature, there is a lack of published cruise research using comprehensive hierarchical modelling to determine the dimensional structure of cruise service quality and to examine the interrelationships between cruise service quality, cruise line image, passenger satisfaction and passenger loyalty. There are also no investigations into the mediating roles of cruise line image and passenger participation. Finally, it is important to examine perceptual

differences between male and female passengers on the research constructs. Each of these research gaps is explained in further detail in the following sections.

1.3.1. Determining the Dimensionality of Cruise Service Quality using Brady and Cronin's (2001) Hierarchical Service Quality Model as the Framework

Marketing research on the cruise industry typically uses SERVQUAL (Lobo, 2008), a unidimensional models (Forgas-Coll et al., 2014; Petrick, 2004; Radic & Lück, 2018), or three-dimensional model (Chua et al., 2015) to measure and investigate service quality. However, there is growing concern about the implementation of these three models. Empirical research on different service types have failed to confirm the five dimensions of SERVQUAL, with many citing instrument problems with the gap scores and negative item wording (Babakus & Boller, 1992; Brown et al., 1993; Cronin & Taylor, 1992; Peitzika et al., 2020). Scholars have also criticised the implementation of the unidimensional model. They report that service quality is a multidimensional construct with a hierarchical structure (Brady & Cronin, 2001; Clemes et al., 2018; Dabholkar, Thorpe & Rentz, 1996). Finally, Chua et al.'s (2015) three-dimensional cruise service quality model is questionable since they did not conduct exploratory factor analysis. Researchers typically use exploratory factor analysis when they adopt new items to measure a construct (Channoi et al., 2018; Clemes et al., 2020). It was the first time that Xie, Kerstetter & Matilla's (2012) cruise attributes were used to measure one of the Chua et al.'s (2015) cruise service quality dimensions. Therefore, it is necessary to determine the dimensionality of cruise service quality using Brady and Cronin's (2001) hierarchical service quality model as the framework.

This research expands the Brady and Cronin's (2001) hierarchical service quality model. The original model has three primary dimensions (interaction quality, physical environment quality, and outcome quality) and each of the primary dimensions has three sub-dimensions. However, this research proposes four primary dimensions: interaction quality, physical environment quality, outcome quality, and social factors. Interaction quality and physical environment quality are proposed having four sub-dimensions and five sub-dimensions, respectively. Both outcome quality and social factors are proposed having three sub-dimensions.

Scholars hold widely differing views on where social factors should be included in the service quality structure. One group of scholars includes social factors under physical environment quality (Brady & Cronin, 2001; Pollack, 2009), however, another group contends that social factors are a separate construct (Jang et al., 2015; Nguyen, DeWitt & Russell-Bennett, 2012). The latter group also affirms the positive influence of social factors on customer evaluation (Nguyen et al., 2012). As cruise ships are often longer than most services and are characterised by various on-board activities, Huang and

Hsu (2009) indicate that the level of social interaction among cruise passengers is much higher than other services. As interaction among customers is an important dimension of social factors (Rosenbaum & Massiah, 2011; Tombs & McColl-Kennedy, 2003), it is essential to include social factors as the fourth primary dimension of cruise service quality to more accurately conceptualize and measure cruise service quality.

1.3.2. Analysing the Interrelationships among Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, and Passenger Loyalty

Scholars contend that service quality is an antecedent of profitable marketing outcomes, including brand image (Clemes et al., 2018; Hapsari et al., 2017), customer satisfaction (Başarangil, 2018; Channoi et al., 2018; Suhartanto et al., 2020), and customer loyalty (Nguyen-Phuoc et al., 2020; Shi et al., 2014; Suhartanto et al., 2013). However, cruise research has not examined the interrelationships between these constructs. Most of the research in this field has concentrated on the effects of cruise service quality on passenger satisfaction and loyalty (Forgas-Coll et al., 2014; Lobo, 2008; Radic & Lück, 2018). The effect of cruise service quality on cruise line image has not been examined. Therefore, this research attempts to close this gap by analysing the interrelationships among cruise service quality, cruise line image, passenger satisfaction, and passenger loyalty.

1.3.3. Analysing the Mediating Role of Cruise Line Image in the Modelling Framework

Previous research has shown the mediating effect of brand image on the service quality-customer satisfaction relationship (Chien & Chi, 2019; Faria & Mendes, 2013). Moreover, Akroush et al. (2016), in their study on Dead Sea tourism destination have concluded that brand image fully mediates the relationship between service quality and customer loyalty. To date, there is no empirical cruise research that evaluates the mediating effect of cruise line image in terms of the relationships between cruise service quality-passenger satisfaction and cruise service quality-passenger loyalty. The current research addresses this research gap.

1.3.4. Analysing the Mediating Role of Passenger Participation in the Modelling Framework

Marketing scholars are aware of the importance of customer involvement. They have not only confirmed the significant influence of service quality dimensions (that is outcome quality and rapport) on customer involvement (Alexandris et al., 2012; Fatima & Razzaque, 2013), but also the significant influence of customer involvement on perceived service quality, brand image, customer

satisfaction and customer loyalty (Alexandris, Kouthouris, Funk & Chatzigianni, 2008; Chua et al., 2017; Forgas-Coll, Palau-Saumell, Matute & Tárrega, 2017; Lu et al., 2015). Furthermore, research on banking reveals the partial mediating role of customer involvement on the relationship between rapport and customer satisfaction (Fatima & Razzaque, 2013). To date, none of the cruise studies have analysed the mediating role of customer involvement on either the outcome quality – cruise service quality relationship or the social factors – cruise service quality relationship. This is an important omission which is addressed in the current research.

There are a number of definitions of customer involvement. One perspective defines customer involvement as the effort devoted to searching for products or services prior to purchase (Laurent & Kapferer, 1985; Richins & Bloch, 1986), and another focuses on the level of customer participation in service activities (Lu et al., 2015; Kim, Scott & Crompton, 1997). As there are many opportunities to participate in various on-board activities, this research applies the latter perspective to examine customer involvement in the cruise industry. In the current research, customer involvement is named passenger participation.

1.3.5. Evaluating Different Perceptions between Male and Female Passengers on the Research Constructs

Research on service performance has found that perceptions differ depending on gender (Clemes, Wu, Hu & Gan, 2009; Radić, et al., 2019). To date, previous cruise research has examined the influence of gender on service quality, satisfaction, and behavioural intention evaluations (Radić, et al., 2019), not cruise line image and passenger participation. As cruise ships offer a variety of services, it is possible that men and women have different views about the research constructs (sub and primary dimensions of cruise service quality, cruise service quality, cruise line image, passenger satisfaction, passenger loyalty, and passenger participation). Thus, it is necessary to evaluate whether evaluation of the research constructs differ for men and women.

1.4. Research Objectives

This research has identified five research gaps that motivate the current research direction. This research will firstly, determine the dimensionality of cruise service quality. Secondly, it will identify the least and most important cruise service quality dimensions. Thirdly, it will analyse the interrelationships among the four higher-order constructs. Fourthly, it will explore the mediating effects of cruise line image and fifthly, passenger participation in the modelling framework. Lastly, it will examine male and female passengers' perceptions of the research constructs. Thus, this research has six specific research objectives:

1. To determine the dimensionality of cruise service quality using Brady and Cronin's (2001) hierarchical service quality model as the framework.

2. To identify the least and most important cruise service quality dimensions.

3. To analyse the interrelationships between cruise service quality, cruise line image, passenger satisfaction and passenger loyalty.

4. To analyse the mediating effect of cruise line image in the modelling framework.

5. To analyse the mediating effect of passenger participation in the modelling framework.

6. To evaluate male and female passengers' perceptions of the research constructs.

1.5. Research Contributions

This research will make several valuable contributions to the service marketing literature, managerial practices and global cruise industry policy. These are outlined below.

a. Research Contributions to Service Marketing Literature

As the first study to employ Brady and Cronin's (2001) hierarchical service quality model to cruise service quality measurement, this research will contribute to the development of service marketing literature in three ways. Firstly, the findings will strengthen the validity of applying hierarchical service quality model in leisure services. The hierarchical model works not only for education (Clemes et al., 2007) and medical services (Dagger et al., 2007), but also for leisure services such as sports (Clemes et al., 2011a) and beach resort hotels (Channoi et al., 2018). Secondly, the research will provide a meticulous approach for measuring cruise service quality that will overcome limitations of previous cruise studies. Finally, this research will extend the cruise service quality literature by using social factors as the fourth primary dimension, distinct from physical environment quality.

The interrelationships among cruise service quality, cruise line image, passenger satisfaction, and passenger loyalty and the mediating role of cruise line image in the modelling framework deserve more scholarly attention. Although much cruise research has postulated the effects of cruise service quality on passenger satisfaction and passenger loyalty (Forgas-Coll et al., 2014; Lobo, 2008; Radic & Lück, 2018), none has examined the effect of cruise service quality on cruise line image and the mediating role of cruise line image. This research will thus provide a clearer understanding of how the cruise line image works in the modelling framework.

The concept of customer participation, as a reflection of customer involvement, has been examined in many studies (Kim et al., 1997; Lu et al., 2015), but not cruise ships. Consequently, this research foregrounds the importance of passenger participation in the cruise experience.

b. Research Contributions to Managerial Practices

This research will help cruise managers to understand (a) passengers' preferences in cruise service quality dimensions; (b) how cruise service quality contribute to perceptions of image, satisfaction and loyalty; and (c) the effect of gender on service evaluations. In addition, the findings will enable the creation of more effective marketing strategies. Specifically, cruise managers will recognise the importance of maintaining attractive on-board activities when they understand the mediating role of passenger participation in the modelling framework.

c. Research Contributions to Global Cruise Industry Policy

The global cruise industry operation is regulated by international regulators such as the International Maritime Organization (IMO), World Health Organization (WHO) and International Labour Organization (ILO). This regulation cover prioritises passenger and crew safety, security, health and wellness (CLIA, 2021b). This study will help regulators understand passengers' perspectives on those aspects through cruise service quality measurement. Therefore, they can create a coherent policy for the cruise industry's future.

1.6. Structure of the Thesis

This thesis consists of the following chapters.

a. Chapter 1: Introduction
   This chapter has provided the background to the research. In addition, it has presented an overview of the cruise industry, identified gaps in the literature, outlined the research objectives and contributions, and provided an overview of the thesis structure.
b. Chapter 2: Literature Review
   This chapter reviews the scholarly literature on the conceptualisation of service quality, service quality in previous cruise studies, cruise service quality dimensions, cruise marketing outcomes (that is, cruise line image, passenger satisfaction, and passenger loyalty), passenger participation, and the impact of gender on service evaluations.
c. Chapter 3: Conceptual Research Model and Hypotheses Development
   This chapter provides information about the conceptual research model and the development of 23 hypotheses.

d. Chapter 4: Research Methodology

   This chapter explains the methods used in this research. More specifically, Chapter 4 covers the research design, questionnaire development, sampling and data collection methods, and data analysis procedure.

e. Chapter 5: Results

   This chapter provides information about the usable responses, preliminary data analysis, respondents' demographic characteristics, exploratory factor analysis, structural equation modelling, mediation analysis, and an independent sample t-test.

f. Chapter 6: Discussion, Implications, Limitations and Recommendations for Future Research

   This chapter reviews the research's results which include the dimensionality of cruise service quality, the least and most important cruise service quality dimensions, the interrelationships of the four higher-order constructs, the mediating roles of cruise line image and passenger participation, and the effect of gender on the research constructs evaluation. Chapter 6 also includes a discussion of empirical and managerial research implications, research limitations, and recommendations for future research.

g. Chapter 7: Epilogue

   Chapter 7 is written in response to the global pandemic effect on the cruise industry. The crisis may bring change in cruise passengers' attitude. This chapter discusses how the current study's findings are likely to change in the post-COVID-19 environment.

Chapter 2

Literature Review

2.1. Introduction

This chapter begins with a discussion of the conceptual basis of service quality and its implementation in previous cruise studies in order to provide a comprehensive literature review. The research on cruise service quality is reviewed to determine the primary dimensions and sub-dimensions employed in this research. Lastly, this chapter provides a detailed review of cruise marketing outcomes (that is, cruise line image, passenger satisfaction and passenger loyalty), passenger participation and research on the influence of gender on service evaluations.

2.2. Conceptualisation of Service Quality

There are two broad views of service quality: the disconfirmation view and the performance-only view. In the disconfirmation view, service quality refers to customer evaluations of the gap between service performance and their expectations (Grönroos, 1984; Haywood-Farmer, 1988; Parasuraman, Zeithaml & Berry, 1985). In the performance-only view, service quality refers to customer evaluations of service performance alone and does not examine customer expectations (Cronin & Taylor, 1992). Service quality research has compared the two viewpoints, and several scholars have promoted the performance-only view over the disconfirmation view (Brochado, 2009; Churchill & Surprenant, 1982; Clow & Vorhies, 1993; Dabholkar, Shepherd & Thorpe, 2000; Jain & Gupta, 2004; Rim & Hun-Koo, 2013). For example, in their study on the restaurant industry, Clow and Vorhies (1993) found that simultaneously questioning customer expectations and evaluations of service performance created biased results due to the volatility of customer expectations (Bolton & Drew, 1991). Thus, much of the subsequent service quality research has applied the performance-only view (Brady & Cronin, 2001; Channoi, et al., 2018; Clemes et al., 2018; Clemes et al., 2020; Dagger et al., 2007). In the current research, cruise service quality is defined as passenger evaluations of onboard service performance.

Services differ from physical products in that they are intangible, heterogeneous, inseparable, perishable, and lack of transfer of ownership (Clemes, Mollenkopf & Burn, 2000; Wirtz & Lovelock, 2018). Consumers find more difficult to evaluate service performance than goods performance. To address this difficulty, marketing scholars have used numerous service quality models, including the Nordic model (Grönroos, 1984), the SERVQUAL model (Parasuraman et al., 1988), the three-

component model (Rust & Oliver, 1994), the multilevel model (Dabholkar et al., 1996) and the hierarchical service quality model (Brady & Cronin, 2001). Each of these models will be discussed in the sections below.

2.2.1. The Nordic Model

In the Nordic model, Grönroos (1984) developed two dimensions, which he called technical quality and functional quality, to evaluate service quality. While technical quality refers to customer service consumption outcomes, functional quality is defined as the service process for dealing with customers' needs. Combined these dimensions form corporate image and perceived service quality (See Figure 2.1).

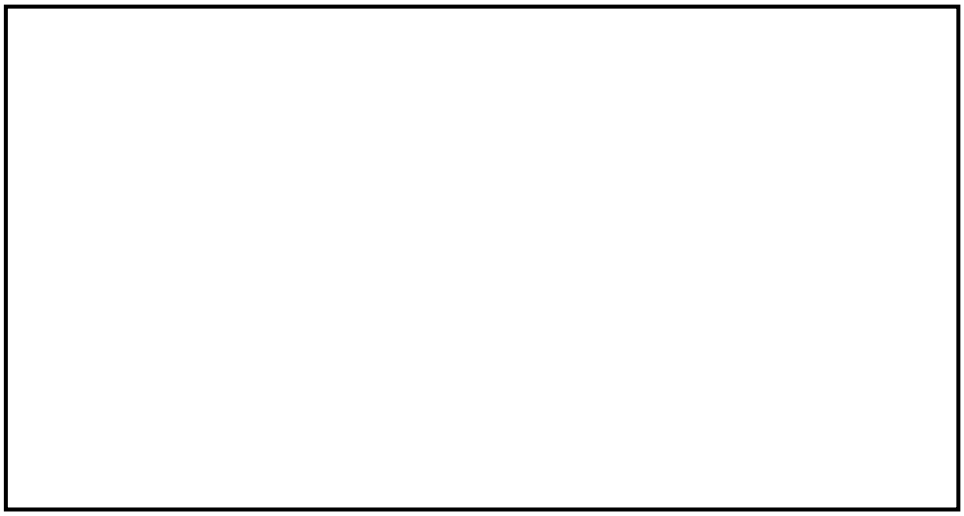

Figure 2.1. The Nordic Model of Service Quality (Grönroos, 1984)

Although the implementation of Grönroos' (1984) model was successful in communication, healthcare, hospitality and education services (Kang & James, 2004; Kasiri, Cheng, Sambasivan & Sidin, 2017), researchers have criticized the model for its lack of a physical environment quality dimension (Pollack, 2009; Wong & Fong, 2012). Physical environment quality is considered a crucial dimension of service quality particularly in facility driven services such as hotels, amusement parks and cruise ships (Brady & Cronin, 2001; Channoi et al., 2018; Turley & Fugate, 1992; Wakefield & Blodgett, 1996).

2.2.2. The SERVQUAL Model

The SERVQUAL model was developed from qualitative and quantitative research findings (Parasuraman et al., 1985; 1988). In exploratory research, Parasuraman et al. (1985) generated an instrument with 97 items to measure service quality. These items were divided into ten dimensions:

reliability, responsiveness, competence, access, courtesy, communication, credibility, security, understanding, and tangibles. Later, the researchers used quantitative methods to test the reliability of the 97-items and the dimensionality of service quality (Parasuraman et al., 1988). This research revealed that many of the instrument items needed to be deleted because of low item-to-total correlation scores. The remaining 22 items were used to create the five dimensions of a service quality model called SERVQUAL (See Figure 2.2). The five dimensions are defined as follows (Parasuraman et al., 1988, p.23):

- *Tangibles: physical facilities, equipment, and appearance of personnel.*
- *Reliability: ability to perform the promised service dependably and accurately.*
- *Responsiveness: willingness to help customers and provide prompt service.*
- *Assurance: knowledge and courtesy of employees and their ability to inspire trust and confidence.*
- *Empathy: caring, individualized attention the firm provides its customers.*

Figure 2.2. The SERVQUAL Model of Service Quality (Parasuraman et al., 1988)

While SERVQUAL has been used in numerous studies, it has been criticised because it does not account for outcome quality and has unstable dimensionality (Buttle, 1996; Ladhari, 2009; Mangold & Babakus, 1991; Peitzika et al., 2020). Marketing scholars contend that outcome quality is a significant service quality dimension in several service contexts, including leisure services (Alexandris, Zahariadis, Tsorbatzoudis & Grouios, 2004; Channoi et al., 2018). The use of negative words in some SERVQUAL items could explain the unstable dimensionality (Babakus & Boller, 1992). For example,

Wason and Johnson-Laird (1972) note that there is a much higher chance of making a mistake when responding to a negative statement in a questionnaire than when responding to a positive statement. Consequently, researchers have been unable to confirm the five dimensions of SERVQUAL in many service contexts, including automotive (3 dimensions), retail (4 dimensions), banking (unidimensional) and fitness centre (4 dimensions) (Bouman & van der Wiele, 1992; Cronin & Taylor, 1992; Gagliano & Hathcote, 1994; Peitzika et al., 2020). Scholars have also found that the SERVQUAL dimensions have poor validity and reliability in electric and gas utility studies (Babakus & Boller, 1992).

2.2.3. The Three-Component Model

The three-component model of service quality expanded upon the Nordic model. In 1994, Rust and Oliver argued that service environment is the third service quality dimension (See Figure 2.3). Service product, service delivery and service environment are associated with technical quality, functional quality, and physical environment quality, respectively. In the same year, McDougall and Levesque also identified those three dimensions in the retail banking service quality model. For this reason, Brady and Cronin (2001) employed Rust and Oliver's (1994) concept to develop their hierarchical service quality model.

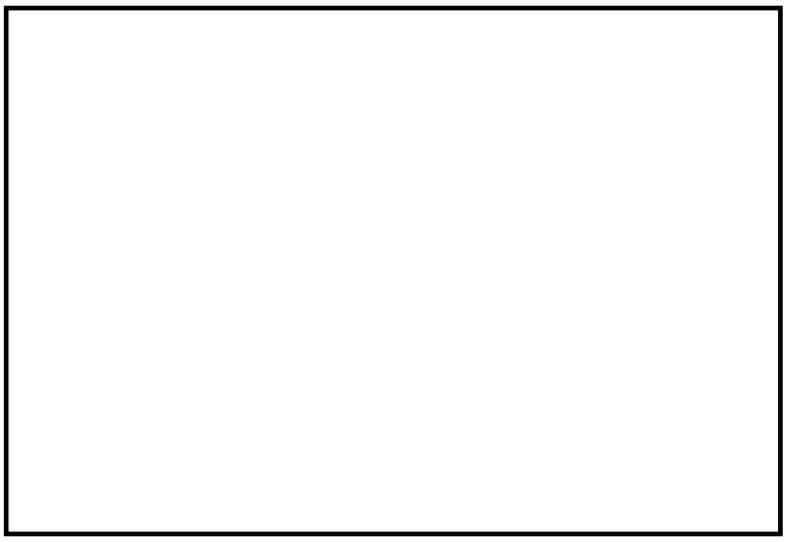

Figure 2.3. The Three-Component Model of Service Quality (Rust & Oliver, 1994)

2.2.4. The Multilevel Model

In 1990, Carman introduced the idea of sub-dimensions in the measurement of service quality and the concept was incorporated into Dabholkar et al.'s (1996) multilevel model. Dabholkar et al.'s (1996) model became a stepping stone for the Brady and Cronin's (2001) hierarchical service quality model because it measured service quality at three different levels: a primary dimensional level, an

overall level, and a sub-dimensional level. However, the sub-dimensions were not thoroughly applied to the primary dimensions in the multilevel model. Dabholkar et al. (1996) suggested five primary dimensions: physical aspects, reliability, personal interaction, problem solving, and policy; the latter two primary dimensions did not have sub-dimensions (See Figure 2.4).

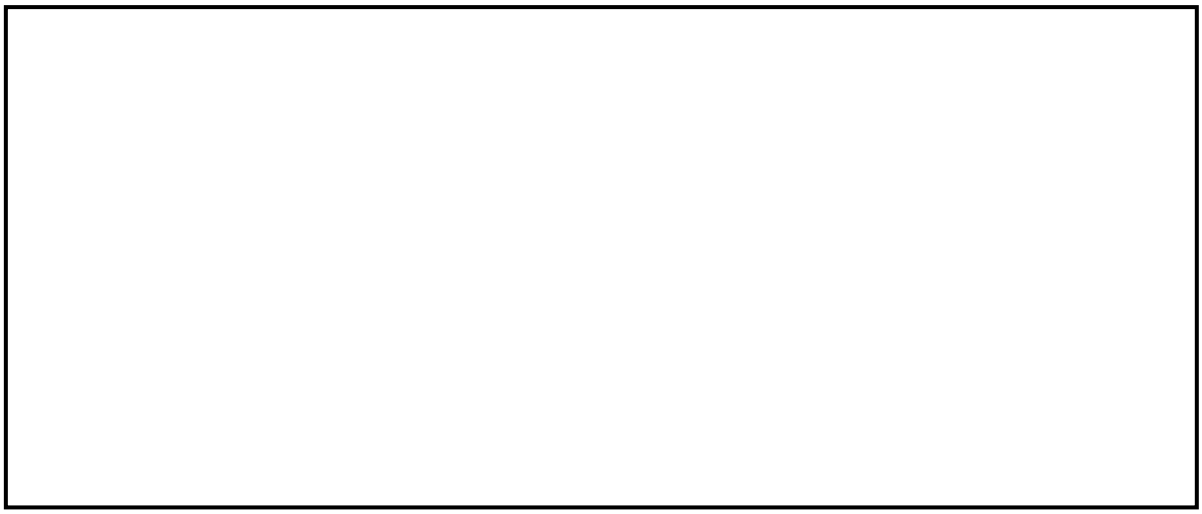

Figure 2.4. The Multilevel Model of Service Quality (Dabholkar et al., 1996)

2.2.5. The Hierarchical Service Quality Model

To address the weaknesses and confusion related to previous models, Brady and Cronin (2001) developed their hierarchical service quality model (See Figure 2.5). They extended Carman's (1990) and Dabholkar et al.'s (1996) dimensional structural work and modified Grönroos' (1984), Parasuraman et al.'s (1988), and Rust & Oliver's (1994) ideas to provide a more comprehensive set of primary dimensions and sub-dimensions for service quality. Brady and Cronin (2001) proposed three primary dimensions (interaction quality, physical environment quality and outcome quality), and each of the primary dimensions had three sub-dimensions. In addition, each of the sub-dimensions had three descriptors which were drawn from SERVQUAL's dimensions (reliability, responsiveness and empathy). The sub-dimensions of interaction quality are attitude, behaviour, and expertise. The sub-dimensions of physical environment quality are ambient conditions, design, and social factors. The sub-dimensions of outcome quality are waiting time, tangibles, and valence. Brady and Cronin (2001) conclude that service quality is a multidimensional construct with a hierarchical structure. There are three levels in hierarchical structure: sub-dimensional level, primary dimensional level, and overall level.

The hierarchical service quality model has achieved widespread success in many studies across a number of contexts, including amusement parks, dry cleaning, fast food, photo developing (Brady & Cronin, 2001), motels (Clemes et al., 2011b), airlines (Wu & Cheng, 2013), moderate upscale

restaurants (Clemes et al., 2018), beach resort hotels (Channoi et al., 2018), and day spas (Clemes et al., 2020). However, the primary dimensions and sub-dimensions often differ across service contexts (Clemes et al., 2018; Dagger, et al., 2007). For example, Dagger et al. (2007) identified four primary dimensions of health service quality: interpersonal quality, technical quality, environment quality, and administrative quality. The sub-dimensions of interpersonal quality are interaction and relationship. The sub-dimensions of technical quality are outcome and expertise. The sub-dimensions of environment quality are atmosphere and tangibles. The sub-dimensions of administrative quality are timeliness, operation, and support. Clemes et al. (2018) identified three primary dimensions of moderate upscale restaurant service quality: interaction quality, physical environment quality, and outcome quality. The sub-dimensions of moderate upscale restaurant interaction quality are employees' interpersonal skills, employees' professionalism skills, and employees' problem solving skills. The sub-dimensions of moderate upscale restaurant physical environment quality are (a) restaurant ambiance and aesthetics, (b) layout and design, (c) menu design, and (d) table setting and restaurant cleanliness. The sub-dimensions of moderate upscale restaurant outcome quality are pleasant dining experience, food quality, and menu variety.

This current research applies a variation of Brady and Cronin's (2001) hierarchical service quality model to the cruise industry. Four primary dimensions (that is, interaction quality, physical environment quality, outcome quality, and social factors) are proposed. Interaction quality is proposed having four sub-dimensions (attitude, behaviour, expertise, problem solving). Physical environment quality is proposed having five sub-dimensions ((a) room facilities, (b) entertainment facilities, (c) recreation, sport, fitness and health facilities, (d) dining and bar facilities, and (e) safety and security). Outcome quality is proposed having three sub-dimensions (an enjoyable time, high quality food, and carefree on-board experience). Social factors are proposed having three sub-dimensions (social interactions with crew, social interactions with other passengers, and social density). Before discussing the choice of the specific dimensions used in this current study, the previous research on cruise service quality is reviewed.

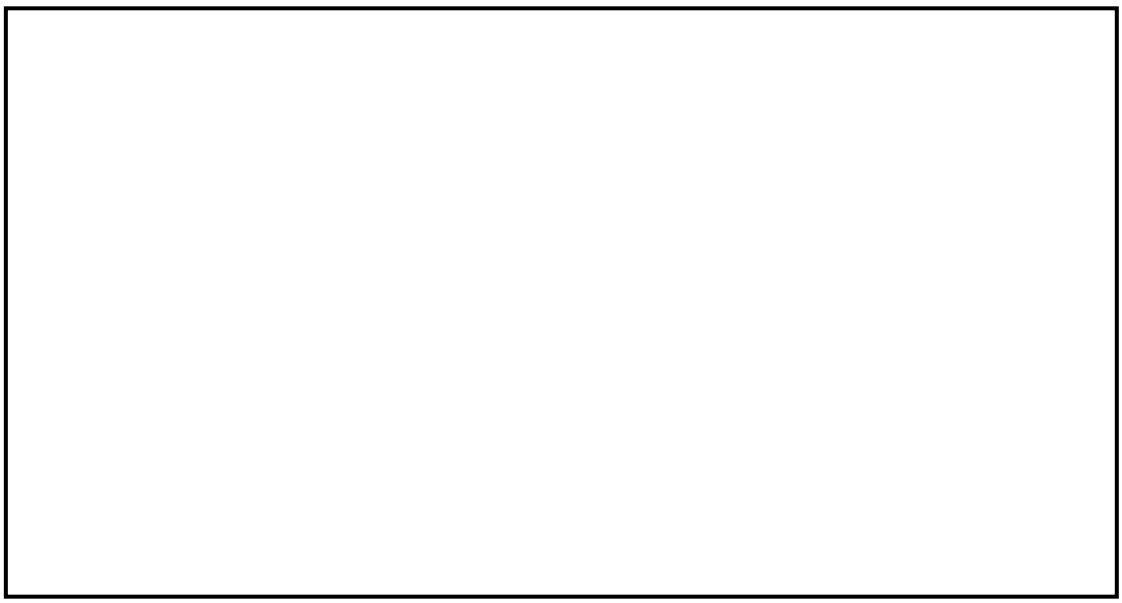

Figure 2.5. The Hierarchical Service Quality Model (Brady & Cronin, 2001)

2.3. Prior Research on Cruise Service Quality

The cruise service quality construct has been characterised many ways: from unidimensional to five-dimensions (Chua et al., 2015; Forgas-Coll et al., 2014; Lobo, 2008; Petrick, 2004; Radic & Lück, 2018, Radić et al., 2019). Petrick (2004) conducted an empirical study of a seven-day Caribbean cruise ship. The author gathered 792 usable questionnaires. The research revealed that cruise service quality was a unidimensional construct and was measured using four items. However, the items only covered the reliability aspect of service performance. In Europe, Forgas-Coll et al. (2014) examined Mediterranean cruises using 729 completed questionnaires. Their findings also confirmed one dimension of cruise service quality and its position as a direct antecedent of customer satisfaction, trust and behavioural intention. In terms of measurement items, Forgas-Coll et al. (2014) only focused on functional aspects. While Petrick's (2004) and Forgas-Coll et al.'s (2014) research examined cruise service quality as a unidimensional construct, numerous scholars have indicated service quality as a multidimensional construct with a hierarchical structure (Brady and Cronin, 2001; Channoi et al., 2018; Clemes et al., 2020; Dabholkar et al., 1996).

In Singapore, Lobo (2008) used the SERVQUAL model for a single mega cruise ship study. The findings were based on information from 190 respondents. Lobo (2008) concluded that tangibles, reliability, responsiveness, assurance, and empathy were cruise service quality dimensions. However, as indicated above, the SERVQUAL model is problematic (Babakus & Boller, 1992; Brown et al., 1993; Cronin & Taylor, 1992; Ladhari, 2009; Peitzika et al., 2020). Furthermore, using data from a single cruise ship may have led to increased sampling errors (Papathanassis, 2012).

Chua et al. (2015) attempted to generate a cruise service quality model using interaction quality, physical environment quality and outcome quality as cruise service quality dimensions. Their online survey was conducted with respondents who had been passengers on a cruise ship within the previous year. They obtained 394 usable responses, but their data analysis did not follow generally accepted methodology. They did not use the recommended practice of employing an exploratory factor analysis when a researcher uses new items to measure a construct. It was the first time that Xie et al.'s (2012) cruise attributes were used to measure outcome quality (Chua et al., 2015).

Wu, Cheng and Ai (2018) employed Brady and Cronin's (2001) framework of a hierarchical service quality model to determine cruise experiential quality model on Bauhinia cruise ferry. They used experiential quality as substitute for service quality. A typical cruise ferry tour lasted two hours and provided entertainment and catering services. The research revealed four primary dimensions: interaction quality, physical environment quality, outcome quality and access quality. The sub-dimensions of cruise ferry interaction quality are staff's performance and staff's ability. The sub-dimensions of cruise ferry physical environment quality are tangibles, ambience, decor & design, entertainment, and souvenir. The sub-dimensions of cruise ferry outcome quality are pleasant ride and waiting time. The sub-dimensions of cruise ferry access quality are convenient access and information. Whether Wu et al.'s (2018) cruise ferry experiential quality model can be applied to the cruise industry is questionable. Cruising is typically an extended holiday (three days or more) on board (Department for Transport, 2016) and cruise ships offer many services and activities, such as accommodation, restaurants and bars, sports, shopping, entertainment, and communication facilities (Dowling, 2006).

In a recent paper, Radić et al. (2019) identified four cruise service quality dimensions (that is, safety, courtesy, show, and efficiency). The authors reported that cruise service quality was a second-order construct. However, the Radić et al.'s (2019) model did not include the outcome quality aspect.

2.4. Cruise Service Quality Dimensions

In order to provide a more complete description of the hierarchical model of cruise service quality, this section discusses the proposed primary dimensions and sub-dimensions and explains why the sets of four primary dimensions and 15 sub-dimensions are chosen for cruise service quality.

a. Interaction Quality

Scholars have used different terms to describe the interaction between customers and service providers, such as functional quality (Grönroos, 1984), personal interaction (Dhabolkar et al., 1996), and interaction quality (Brady & Cronin, 2001). In addition, the significant positive relationship

between interaction quality and overall service quality has been confirmed in many different services (Alexandris et al., 2004; Brady & Cronin, 2001; Channoi et al., 2018; Clemes et al., 2007; Clemes et al., 2011b). The findings in a New Zealand study illustrated that university students viewed interaction quality as the most important primary dimension of service quality (Clemes et al., 2007). As a cruise ship offers many types of services over an extended period of time, passengers are likely to have multiple and repeated interactions with crew members (Skaalsvick, 2011). Thus, interaction quality should be considered as a primary dimension of cruise service quality.

In terms of interaction quality sub-dimensions, Brady and Cronin (2001) suggested three: attitude, behaviour and expertise. However, the prolonged and high intensity of interactions between cruise passengers and crew means that there is a much higher possibility of service failure (Skaalsvik, 2011). Like Caro and García (2007) and Clemes et al. (2011b), this research proposes problem solving as the fourth sub-dimension of interaction quality. Service personnel should display warmth, friendliness, politeness and courtesy (Brady & Cronin, 2001; Channoi et al., 2018). Staff members should respond quickly, display appropriate body language, and provide individual attention when addressing customers' needs (Channoi et al., 2018; Pollack, 2009). Expertise is represented by employees' working and communication skills, service knowledge and professionalism (Bakar, Clemes & Bicknell, 2017). Problem solving is defined as an employee's abilities to handle complaints and provide appropriate solutions (Caro & García, 2007; Wu & Cheng, 2013).

b. Physical Environment Quality

Although marketing scholars accept physical environment quality as a primary dimension of service quality (Brady & Cronin, 2001; Clemes et al., 2018; Tang et al., 2020), they provide different definitions for this dimension. While Baker (1987) includes all man-made facilities and the social environment, Bitner (1992) only focuses on the physical facilities (See Zeithaml, Bitner & Gremler, 2009). Instead of physical environment quality, Bitner (1992) uses the term servicescape. Brady and Cronin (2001) support Baker's (1987) perspective through proposing ambient conditions, design, and social factors as sub-dimensions of physical environment quality. In contrast, Clemes et al. (2018) follow Bitner's (1992) definition and use (1) restaurant ambience and aesthetics, (2) layout and design, (3) table settings and restaurant cleanliness, and (4) menu design as sub-dimensions to measure physical environment quality in moderate upscale restaurants. Some researchers classify social factors as a unique construct (that is, different from physical environment quality) (Jang et al., 2015; Nguyen et al., 2012; Yan, 2017). In this current research physical environment quality refers to the onboard cruise facilities that shape passenger service evaluations.

In cruise studies, the measurement of physical environment quality has received considerable attention (Kwortnik, 2008; Lyu, Hu, Hung, & Mao, 2017). Kwortnik (2008) introduced three dimensions of the cruise servicescape: ambient factors, design factors, and social factors. He performed qualitative research and gathered data from the online discussion website CruiseCritic.com. However, it is generally agreed that both qualitative and quantitative research are needed to develop the dimensionality of a construct (Bakar et al., 2017; Channoi et al., 2018; Clemes et al., 2020). In subsequent research, Lyu et al. (2017) generated six cruise servicescape dimensions, namely (a) facilities and decor, (b) natural scenery, (c) onshore excursions, (d) onboard entertainment, (e) social interaction, and (f) dining service. As a cruise ship is a controlled environment (Henthorne, George & Smith, 2013), Lyu et al.'s (2017) assertions have been challenged. Cruise ships cannot control their scenery (apart from deciding where they travel), so it is necessary to determine the dimensions of cruise physical environment quality.

Cruise ships provide extensive on-board facilities, including restaurants, bars, sports facilities, entertainment spaces, shopping venues, and communication centres (Dowling, 2006). Xie et al. (2012) found that passenger evaluations differed as a result of four essential attributes: (a) entertainment, (b) core (that is, cabins and restaurants), (c) fitness & health, and (d) crew attributes. In that study, crew attributes reflected the interaction quality dimension. Recreation, sport, fitness and health facilities have also become increasingly popular, as cruise lines emphasise the "wellness" aspects of cruising (Dowling & Vasudavan, 2000; Ward, 1999). Further, it has been argued that a ship's safety and security features may provide a competitive advantage over other leisure services (CLIA, 2004). A qualitative study has shown that cruise ship passengers' primary concern is on-board safety (Radić, 2017) and safety and security have been confirmed as a sub-dimension of physical environment quality in the airline industry (Wu & Cheng, 2013). Consequently, this research proposes (1) room facilities, (2) entertainment facilities, (3) recreation, sport, fitness and health facilities, (4) dining and bar facilities, and (5) safety and security, as sub-dimensions of physical environment quality in the cruise industry.

c. Outcome Quality

Outcome quality is defined as what customers receive after service consumption (Grönroos, 1984). Outcome quality is often the most important primary dimension of service quality in the hospitality industry (Clemes et al., 2011b; Clemes et al., 2018). Brady and Cronin (2001) introduced three sub-dimensions of outcome quality: waiting time, tangibles, and valence. However, the current research considers different sub-dimensions because travellers display common motivations for choosing a cruise holiday. They are, having an enjoyable time, eating high quality food, and having a stress-free holiday (Davidoff & Davidoff, 1994; Dowling & Vasudavan, 2000; Krieger et al., 2005).

Cruise vacations are designed to offer maximum enjoyment and provide a break from routine (Papathanassis, 2012). Clemes et al. (2011b) identified pleasant stay as a sub-dimension of motel outcome quality. Wu et al. (2018) also identified pleasant ride as a sub-dimension of cruise ferry outcome quality. Moreover, food quality is an important aspect of hospitality service quality (Clemes et al., 2018; Wilkins, Merrilees & Herington, 2007). New research has shown that food quality is a sub-dimension of outcome quality for restaurants (Clemes et al., 2018). Therefore, this research proposes an enjoyable time, high quality food, and carefree on-board experience as sub-dimensions of outcome quality in the cruise context.

d. Social Factors

This research contends that social factors are distinct from physical environment quality; that they are primary dimension of cruise service quality. Yan (2017), in her study on higher education service quality explains that social factors quality is primary dimension of service quality, along with interaction quality, physical environment quality, and outcome quality. Social factors refer to interactions among individuals in a service environment (Hightower, Brady & Baker, 2002). Much research has stressed the influence of social factors on service experience (Butcher, 2005; Grove & Fisk, 1997; Tombs & McColl-Kennedy, 2003).

Jang et al. (2015) generated four dimensions of social factors in the restaurant industry: service employees, other customers, social crowding, and rapport. However, only the latter three dimensions are adopted in the current research since service employees refers to service providers' attitudes and behaviour, which are typically considered as sub-dimensions of interaction quality (Bakar et al., 2017; Brady & Cronin, 2001). According to online and face-to-face surveys, the interactions between passengers have a significant effect on an individual's cruise experience (Huang & Hsu, 2010; Papathanassis, 2012). Pons, Giroux, Mourali and Zins (2016) report that there is a positive impact of social density on consumers' experiences in leisure service (bar). Moreover, rapport, which reflects social interactions between customers and service employees, also contributes to repurchase intentions (Butcher, 2005). Thus, this current research proposes three sub-dimensions for social factors in the cruise industry: social interactions with crew, social interactions with other passengers, and social density.

2.5. Cruise Marketing Outcomes

This research focuses on three cruise marketing outcomes: cruise line image, passenger satisfaction, and passenger loyalty. This section provides descriptions of each construct and its role in the marketing framework.

2.5.1. Cruise Line Image / Brand Image

Image refers to a customer's overall impression of a particular product or service (Zimmer & Golden, 1988). Barich and Kotler (1991) expand the definition to include a customer's beliefs, attitudes, and impression of a certain company/brand/place/person. The authors also discuss four types of image: corporate image, product image, brand image, and marketing image. Corporate image refers to a customer's view of the whole company, while product image focuses on a product category. Brand image is defined as a customer's view of a particular brand compared with its competitor. Marketing image refers to a customer's view of a company's marketing mix quality. Nguyen and LeBlanc (1998) argue that image includes both a customer's impression and their validation of the service provider's promise. A customer provides a positive evaluation of image when the service provider fulfils what they have promised to the customer.

Most cruise corporations (for example, the Carnival Corporation & plc, Royal Caribbean Cruises Ltd, and Norwegian Cruise Line Holdings) employ a multi-brand strategy. In this strategy, similar products are marketed using different brands. There is competition between the brands (Aaker, 2004). The corporate role is to maintain fair competition among them (Aaker, 2004). For example, Carnival Corporation & plc has nine cruise line brands: Carnival Cruise Line, Princess Cruises, Holland America Line, Seabourn, Cunard, AIDA Cruises, Costa Cruises, P&O Cruises UK, and P&O Cruises Australia (Carnival Corporation & plc, 2020). In this study, cruise line image is conceptualised as a reflection of brand image (Douglas, Mills & Phelan, 2010). This perspective differs from Han et al.'s (2019) perspective which defines cruise line image as a corporate image.

Brand image has received a lot of attention in the marketing literature. Aaker (1991) defines brand image as a set of brand associations that a customer keeps in mind. Jin, Lee & Huffman (2012) explain that brand image refers to a customer's emotions, ideas, and attitudes towards a particular brand. Saleem, Zahra and Yaseen (2017) consider brand image as a significant variable in maintaining a company's market share in a competitive market.

Scholars have used the impression aspect to measure brand image (Echtner & Ritchie, 1991; Low & Lamb, 2000). In their study on the hotel industry, Kandampully and Suhartanto (2003) add reputation aspect to measure brand image. Clemes et al. (2007) use customer validation of a service provider's promise to measure university image. For these reasons, the current research measures cruise line image with impression, reputation, and validation of promises made to the customer.

2.5.1.1. The Relationship between Cruise Service Quality and Cruise Line Image

As previously noted, the relationship between cruise service quality and cruise line image has not been addressed in the literature. However, research in the service sector has found the relationship between service quality and brand image to be significant. Clemes et al. (2018) have determined the positive and significant influence of moderate upscale restaurant service quality on brand image. In the hotel industry, service quality has been identified as determinant of hotel image (Liat, Mansori & Huei, 2014). Finally, for airline passengers, good service quality contributes to positive brand image (Hapsari et al., 2017; Yang, Hsieh, Li & Yang, 2012).

2.5.2. Passenger Satisfaction / Customer Satisfaction

Customer satisfaction is a key determinant of profitability because the cost of keeping existing customers is lower than the cost of recruiting new ones (Zeithaml et al., 2009). Cruise lines understand that customer satisfaction is extremely important. The construct is often referred to as the ultimate goal of cruise lines (Lobo, 2008).

Customer satisfaction refers to a customer's emotional response to the performance of a physical product or service, and these reactions can be pleasant or unpleasant (Oliver, 2010). Marketing scholars have typically assessed customer satisfaction using one of two different perspectives: transaction–specific and cumulative (Forgas-Coll et al., 2014). According to the transaction-specific perspective, customer satisfaction represents a customer's emotional response to their most recent transactional experience (Bitner & Hubert, 1994). In contrast, the cumulative perspective defines customer satisfaction as a customer's emotional response to their experience of service in total (Rust & Oliver, 1994; Spreng, Dixon & Olshavsky, 1993).

Conceptualisation of customer satisfaction in the transaction-specific perspective is beneficial to improve service offerings in some situations, like short-duration, low involvement, and one-off service encounters. In contrast, the cumulative perspective is beneficial for building long-term customer relationships (Anderson & Fornell, 1994). Boulding, Ajay, Staelin and Zeithaml (1993) demonstrate that overall customer satisfaction is more likely to lead to positive word-of-mouth and repurchase intentions than transaction-specific satisfaction. Consequently, it is common in marketing research, including that on the cruise industry, to employ the cumulative perspective when assessing customer satisfaction (Channoi et al., 2018; Forgas-Coll et al., 2014; Huang & Hsu, 2010; Lobo, 2008; Petrick, 2004).

2.5.3. Passenger Loyalty / Customer Loyalty

Loyal customers can be the most valuable assets for a service company. Loyal customers are more likely to repurchase and/or provide positive reviews of the company (Harris & Goode, 2004; Lovelock & Wirtz, 2007). Loyalty refers to,

> *"a deeply held commitment to rebuy or repatronize a preferred product/service consistently in the future, thereby causing repetitive same-brand or same brand-set purchasing, despite situational influences and marketing efforts having the potential to cause switching behaviour" (Oliver, 1999, p.34).*

In general, marketing scholars apply one of two perspectives (behavioural or attitudinal) to define customer loyalty. The behavioural perspective considers customer loyalty as repeat buying of products or services from a particular brand (Blattberg & Sen, 1974; Ehrenberg, Goodhardt & Barwise, 1990; Kahn, Kalwani & Morrison, 1986). In contrast, the attitudinal perspective considers customer loyalty as a customer's psychological attachment and attitudinal advocacy to a brand (Chaudhuri & Holbrook, 2001; Rauyruen & Miller, 2007).

One of the limitations of behavioural loyalty is its inability to explain the motivations behind customer loyalty (Han, Kwortnik & Wang, 2008; Pritchard, Havitz & Howard, 1999; Zeithaml, Berry & Parasuraman, 1996). Dick and Basu (1994) note that identifying customer loyalty using repeat buying alone may led to spurious loyalty. Criticism of the behavioural perspective has meant that researchers have employed the attitudinal perspective to the measurement of customer loyalty (Bandyopadhyay, Gupta & Dube, 2005; Chaudhuri & Holbrook, 2001; Jaiswal & Niraj, 2011). Attitudinal loyalty has also been used in cruise ship research. Forgas-Coll et al. (2014) used attitudinal loyalty to measure passenger loyalty in Mediterranean cruises. Attitudinal loyalty includes repurchase intentions, positive word of mouth, and a willingness to recommend a brand to other customers (Kim, Park & Jeong, 2004; Oliver, 1999; Rauyruen & Miller, 2007). This current research applies the attitudinal perspective to define passenger loyalty.

2.5.3.1. The Relationships between Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, and Passenger Loyalty

Empirical research suggests that service quality and brand image are antecedents of customer satisfaction and customer loyalty (Channoi et al., 2018; Clemes et al., 2018; Hapsari et al., 2017). The positive and significant influence of service quality on customer satisfaction has been identified in a number of contexts, including theme parks (Başarangil, 2018), moderate upscale restaurants (Clemes

et al., 2018), taxi (Suhartanto et al., 2020) and leisure services (Su, Swanson & Chen, 2016). In a study on beach resort hotels, Channoi et al. (2018) explain that brand image has a significant positive influence on customer satisfaction. The positive and significant influence of brand image on customer satisfaction has also been identified in Taiwan hotels (Clemes et al., 2009), Indonesian airlines (Hapsari et al., 2017) and Malaysian restaurants (Clemes et al., 2018). Finally, service quality (Nguyen-Phuoc et al., 2020; Shi et al., 2014; Suhartanto et al., 2013) and brand image (Channoi et al., 2018; Jin et al., 2012) have been identified as having a positive and significant effect on customer loyalty.

Scholars report that customer satisfaction is of paramount importance in the development of an organisation as it leads to customer loyalty (Caruana, 2002; Zeithaml et al., 2009). Although some researchers have not found a significant effect of customer satisfaction on customer loyalty (Gan, Cohen, Clemes & Chong, 2006; Ouhna & Mekkaoui, 2013; Reichheld, 1994), the significant effect of customer satisfaction on customer loyalty has been confirmed by several researchers (Channoi et al., 2018; Hapsari et al., 2017, Liat et al., 2014; Osman & Sentosa, 2013; Suhartanto et al., 2020).

In the cruise industry, research provides strong evidence that cruise service quality contributes to passenger satisfaction and behavioural intentions (Forgas-Coll et al., 2014; Han et al., 2019; Radic & Lück, 2018). Moreover, cruise line image contributes to passenger satisfaction (Han et al., 2019). Research also confirms the significant effect of passenger satisfaction on passenger loyalty (Hosany & Witham, 2010; Lobo, 2008; Petrick, 2004; Wu, Lv, Cavusoglu & Cobanoglu, 2021).

2.5.3.2. The Mediating Role of Cruise Line Image in the Marketing Framework

Brand image is not only an important determinant of customer satisfaction and customer loyalty (Clemes et al., 2009; Channoi et al., 2018; Hapsari et al., 2017; Jin et al., 2012), but also an outcome of service quality (Clemes et al., 2018; Kayaman & Arasli, 2007; Yang et al., 2012). Jin et al. (2012) report the mediating effect of brand image on the relationship between food quality and customer satisfaction in the restaurant industry. Chien and Chi (2019) highlight the mediating role of brand image on the relationship between service quality and customer satisfaction in the exhibition industry. Finally, Akroush et al. (2016) have noted the mediating role of brand image on the service quality – tourist loyalty relationship.

2.6. Passenger Participation / Customer Involvement

Customer involvement is another important construct in the marketing literature because the construct leads to customer satisfaction and customer loyalty. Iwasaki and Havitz (2004) demonstrate the positive effect of leisure involvement on customer loyalty. In their study on

professional sport spectatorship, Clemes et al. (2011a) describe how fanship encourages spectator satisfaction and the likelihood to recommend the experience to others. In addition, Prebensen, Woo, Chen and Uysal (2013) emphasise that understanding customer involvement helps marketing managers to predict a customer's future behaviours.

Some marketing researchers have used customer involvement and customer engagement interchangeably (Astin, 1999; Sharkness & De Angelo, 2011). However, other scholars argue that customer involvement and customer engagement are different constructs (Brodie, Hollebeek, Juric & Ilic, 2011; Harrigan, Evers, Miles & Daly, 2018). Brodie et al. (2011) define customer engagement as a customer's psychological connections with a certain brand. Harrigan et al. (2018) also provide evidence that customer involvement is the antecedent of customer engagement. Consequently, this research considers that customer involvement differs from customer engagement.

While customer involvement is not a new topic in the services marketing literature, there is still considerable debate about how it is defined. Some researchers describe customer involvement as the process of gathering information before deciding to purchase goods or services (Laurent & Kapferer, 1985; Richins & Bloch, 1986). Meanwhile, in the case of leisure activities, customer involvement refers to customer participation in service activities (Alexandris et al., 2012; Kim et al., 1997; Lu et al., 2015). Lu et al. (2015) define tourist involvement as a tourist's participation in tourist activities. Gursoy and Gavcar (2003) also discuss involvement as the state of motivation and desire to participate in a certain activity.

Considering the characteristics of cruise holiday, the long duration, and the numerous onboard activities available, the definition of customer involvement as customer participation (Alexandris et al., 2012; Kim et al., 1997; Lu et al., 2015) is considered more appropriate. In the cruise industry, customer involvement is defined as passenger participation in onboard activities. This is the first cruise research measuring customer involvement using passenger participation.

2.6.1. The Mediating Role of Passenger Participation in the Marketing Framework

As indicated in banking research, rapport has significant influence on customer involvement and customer involvement mediates the relationship between rapport and customer satisfaction (Fatima & Razzaque, 2013). Rapport is part of social factors (Jang et al., 2015). Alexandris et al. (2012) have also identified the significant influence of outcome quality on customer involvement in recreational dancing. Customer involvement is an antecedent of perceived service quality in the cruise industry (Chua et al., 2017). Given the significant effects of rapport and outcome quality on customer involvement and of customer involvement on perceived service quality, passenger participation is

expected to mediate the relationship between outcome quality – cruise service quality, and social factors – cruise service quality.

2.7. The Impact of Gender on Service Evaluations

The evaluation of service performance in hotels (Clemes et al., 2009) and cruise services (Radić et al., 2019) differs depending on an individual's gender. Male and female perceptions also differ in terms of their satisfaction and loyalty (Skogland & Siguaw, 2004). To date, previous cruise research has only examined the influence of gender on service quality, satisfaction, and word of mouth evaluations (Radić et al., 2019), not brand image, passenger participation or customer loyalty. Scholars have found that male customers pay more attention to hotel image when making a reservation than female customers (Lien, Wen, Huang & Wu, 2015). Lee, Bai and Murphy (2012), in their study on the hotel industry, also confirm the significant difference between male and female perceptions of customer involvement. Thus, this research compares male and female passenger perceptions of sub and primary dimensions of cruise service quality, cruise service quality, cruise line image, passenger satisfaction, passenger loyalty, and passenger participation.

2.8. Summary

This chapter discusses the scholarly literature on the conceptualisation of service quality and its relationships with brand image, customer satisfaction, customer loyalty and customer involvement. The literature on cruise service quality and the gender effect on service evaluations has also been reviewed. The next chapter deals with the conceptual research model and the underlying theory for each research hypothesis.

Chapter 3

Conceptual Research Model and Hypotheses Development

3.1. Introduction

This chapter discusses the conceptual research model and the hypotheses that are tested in this research. The conceptual research model consists of five higher-order marketing constructs, four primary dimensions of cruise service quality, and their 15 sub-dimensions. The 23 hypotheses pertaining to the proposed relationships are identified and discussed in this chapter.

3.2. Model Development

The conceptual research model (Figure 3.1) applies a variation of Brady and Cronin's (2001) hierarchical service quality model and comprehensive hierarchical modelling. Brady and Cronin (2001) measure service quality at three ordered and hierarchical levels: overall service quality, primary dimensions, and sub-dimensions. There are multiple sub-dimensions that pertain to each service quality primary dimension. The primary dimensions reflect customers' overall perceptions of service quality. The primary dimensions in this study are interaction quality, physical environment quality, outcome quality and social factors. Interaction quality has four sub-dimensions: (a) attitude, (b) behaviour, (c) expertise, and (d) problem solving. Physical environment quality has five sub-dimensions: (a) room facilities, (b) entertainment facilities, (c) recreation, sport, fitness and health facilities, (d) dining and bar facilities, and (e) safety and security. Outcome quality has three sub-dimensions: (a) an enjoyable time, (b) high quality food, and (c) carefree on-board experience. Social factors have three sub-dimensions: (a) social interactions with crew, (b) social interactions with other passengers, and (c) social density. It is expected that the relationships between the sub-dimensions and their primary dimension will be statistically significant, as will the relationships between the primary dimensions and overall cruise service quality.

Cruise service quality is also expected to have a positive, significant influence on cruise line image, passenger satisfaction and passenger loyalty, since the model uses comprehensive hierarchical modelling. Finally, cruise line image and passenger participation are expected to play mediating roles in the research model.

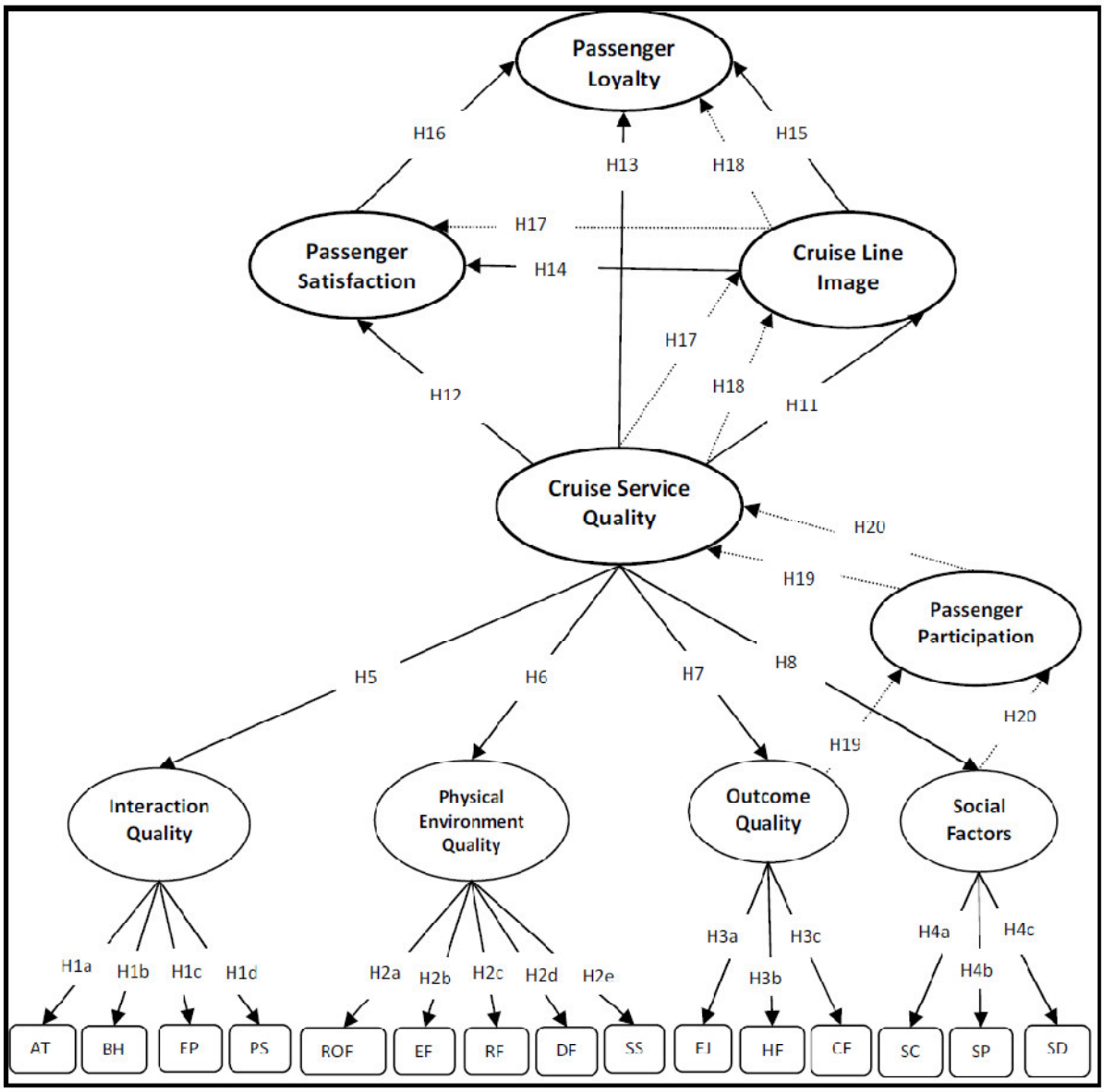

Figure 3.1. The Proposed Research Model

AT = Attitude, BH = Behaviour, EP = Expertise, PS = Problem Solving, ROF = Room Facilities, EF = Entertainment Facilities, RF = Recreation, Sport, Fitness and Health Facilities, DF = Dining and Bar Facilities, SS = Safety and Security, EJ = An Enjoyable Time, HF = High Quality Food, CF = Carefree On-board Experience, SC = Social Interactions with Crew, SP = Social Interactions with Other Passengers, SD = Social Density.

3.3. Hypotheses Development

Hypotheses predict the relationships between constructs. The hypotheses in this research are grouped by the relevant research objectives and are explained in detail below.

3.3.1. Hypotheses Relating to Research Objective 1: The Dimensionality of Cruise Service Quality using Brady and Cronin's (2001) Hierarchical Service Quality Model as the Framework

The structure of the service quality primary dimensions and their sub-dimensions varies according to the service characteristics (Clemes et al., 2018; Dagger et al., 2007). In many studies that focus on service quality, the primary dimensions include interaction quality, physical environment quality and outcome quality (Bakar et al., 2017; Brady & Cronin, 2001; Channoi et al., 2018; Clemes et al., 2007; Clemes et al., 2011a). However, because of the extended nature of cruise holidays and the availability of various on-board activities, passengers have numerous opportunities to interact with other people on the cruise ship. Therefore, social factors have been included as a fourth primary dimension. Scholars argue that social factors differ from the physical environment quality construct (Nguyen et al., 2012; Jang et al., 2015; Yan, 2017). Yan (2017) also included social factors as a fourth primary dimension for higher education service quality. This current research proposes 15 sub-dimensions which are discussed in the following sub-sections.

3.3.1.1. The Sub-dimensions of Interaction Quality

In this research, four sub-dimensions have been proposed as reflective indications of interaction quality: attitude, behaviour, expertise, and problem solving. Previous hierarchical service quality research has used attitude, behaviour, and expertise as the sub-dimensions of interaction quality (Brady & Cronin, 2001). In addition, Caro and García (2007) have identified problem solving as a sub-dimension of interaction quality in the transportation industry. Problem solving is needed to deal with service failures, and cruise ships have a greater probability of service failures as there is an intensification of interactions between passengers and crew over an extended period of time (Skaalsvik, 2011).

3.3.1.2. The Sub-dimensions of Physical Environment Quality

Kwortnik (2008), in his study on the online discussion website CruiseCritic.com, concluded that cruise physical environment quality has three dimensions: ambient factors, design factors, and social factors. Similarly, Brady and Cronin (2001) employed ambient conditions, facility design, and social factors as sub-dimensions of physical environment quality. However, several researchers exclude

social factors from physical environment quality arguing that physical environment quality should only account for artificial facilities in the service environment (Bitner, 1992; Tombs & McColl-Kennedy, 2003; Nguyen et al., 2012; Jang et al., 2015). Xie et al. (2012) identified four attributes specific to cruise ships: (a) entertainment, (b) core (cabins and restaurants), (c) fitness and health, and (d) crew attributes. Moreover, customers place a high value on-board safety and security attributes prior to booking cruise holidays (CLIA, 2004). For these reasons, this research includes five sub-dimensions under cruise physical environment quality: (a) room facilities, (b) entertainment facilities, (c) recreation, sport, fitness and health facilities, (d) dining and bar facilities, and (e) safety and security.

3.3.1.3. The Sub-dimensions of Outcome Quality

In the cruise industry, outcome quality refers to the unique passenger benefits derived from cruise services. According to passengers, a cruise vacation provides various benefits including an enjoyable time, high quality food, and a stress-free holiday (Davidoff & Davidoff, 1994; Dowling & Vasudavan, 2000; Krieger et al., 2005). Clemes et al. (2018) included food quality as a sub-dimension of outcome quality in the restaurant industry. In addition, Clemes et al. (2011b) identified pleasant stay as a sub-dimension of outcome quality in the motel industry. This research proposes three sub-dimensions of cruise outcome quality: an enjoyable time, high quality food, and carefree on-board experience.

3.3.1.4. The Sub-dimensions of Social Factors

Jang et al. (2015) identified four dimensions of social factors in the restaurant industry: service employees, other customers, social crowding, and rapport. However, service employees are often related to attitudes and behaviour, and scholars have typically included attitudes and behaviour as sub-dimensions of interaction quality (Bakar et al., 2017; Brady & Cronin, 2001). This research proposes three sub-dimensions of cruise social factors: social interactions with crew, social interactions with other passengers, and social density.

The following hypotheses have been formulated to determine the dimensionality of cruise service quality:

H1: There is a significant positive relationship between the sub-dimensions of interaction quality (H1a, H1b, H1c, and H1d) and the interaction quality primary dimension.

H2: There is a significant positive relationship between the sub-dimensions of physical environment quality (H2a, H2b, H2c, H2d, and H2e) and the physical environment quality primary dimension.

H3: There is a significant positive relationship between the sub-dimensions of outcome quality (H3a, H3b, and H3c) and the outcome quality primary dimension.

H4: There is a significant positive relationship between the sub-dimensions of social factors (H4a, H4b, and H4c) and the social factors primary dimension.

H5: There is a significant positive relationship between the interaction quality primary dimension and passengers' overall perceptions of cruise service quality.

H6: There is a significant positive relationship between the physical environment quality primary dimension and passengers' overall perceptions of cruise service quality.

H7: There is a significant positive relationship between the outcome quality primary dimension and passengers' overall perceptions of cruise service quality.

H8: There is a significant positive relationship between the social factors primary dimension and passengers' overall perceptions of cruise service quality.

3.3.2. Hypotheses Relating to Research Objective 2: The Least and Most Important Cruise Service Quality Dimensions

Numerous studies have examined passengers' perceptions of cruise service quality (Chua et al., 2015; Forgas-Coll et al., 2014; Lobo, 2008; Radic & Lück, 2018). However, there is a lack of research on the comparative importance of the cruise service quality dimensions. Scholars have noted that empirical research on service quality should pay attention to the most and least important dimensions (Clemes, Gan, Kao & Choong, 2008; Josiam, Sohail & Monteiro, 2007; Lari, Jabeen & Iyanna, 2020). Consequently, this research formulates the following hypotheses:

H9: Cruise passengers vary in their perceptions of the importance of each of the sub-dimension.

H10: Cruise passengers vary in their perceptions of the importance of each of the primary dimension.

3.3.3. Hypotheses Relating to Research Objective 3: The Interrelationships between Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty

Marketing studies have widely affirmed that service quality is an antecedent of brand image, customer satisfaction, and customer loyalty (Channoi et al., 2018; Clemes et al., 2018; Hapsari et al., 2017; Liat et al., 2014; Nguyen-Phuoc et al., 2020; Suhartanto et al., 2013; Suhartanto et al., 2020).

Liat et al. (2014) demonstrate a significant influence of service quality on hotel image. The influence of service quality on customer satisfaction and customer loyalty has also been confirmed in several different services, including taxi (Suhartanto et al., 2020), theme parks (Başarangil, 2018), moderate upscale restaurants (Clemes et al., 2018), leisure services (Su et al., 2016), beach resort hotels (Channoi et al., 2018) and casinos (Shi et al., 2014). Brand image also has positive and significant influence on customer satisfaction and customer loyalty (Clemes et al., 2009; Hapsari et al., 2017; Jin et al., 2012). Customer satisfaction is a highly influential determinant of customer loyalty in the cruise industry (Wu et al., 2021). Thus, this research will test the following hypotheses:

H11: Higher perceptions of cruise service quality positively affect cruise line image.

H12: Higher perceptions of cruise service quality positively affect passenger satisfaction.

H13: Higher perceptions of cruise service quality positively affect passenger loyalty.

H14: Higher perceptions of cruise line image positively affect passenger satisfaction.

H15: Higher perceptions of cruise line image positively affect passenger loyalty.

H16: Higher perceptions of passenger satisfaction positively affect passenger loyalty.

3.3.4. Hypotheses Relating to Research Objective 4: The Mediating Effect of Cruise Line Image in the Modelling Framework

This research proposes cruise line image as a mediating variable in the relationships between cruise service quality, passenger satisfaction, and passenger loyalty. Chien and Chi (2019) have cited the exhibition industry as one instance where brand image mediates the relationship between service quality and customer satisfaction. In addition, research on the tourism industry has shown that brand image mediates the relationship between service quality and customer loyalty (Akroush et al., 2016). Thus, the following hypotheses will be analysed:

H17: Cruise line image mediates the relationship between cruise service quality and passenger satisfaction.

H18: Cruise line image mediates the relationship between cruise service quality and passenger loyalty.

3.3.5. Hypotheses Relating to Research Objective 5: The Mediating Effect of Passenger Participation in the Modelling Framework

Like cruise line image, this research proposes passenger participation as a mediating variable in the relationships between outcome quality, social factors, and cruise service quality. Researchers have identified the significant influence of service quality dimensions (that is, rapport and outcome quality) on customer involvement (Alexandris et al., 2012; Fatima & Razzaque, 2013) and a significant influence of customer involvement on perceived service quality (Chua et al., 2017). Fatima and Razzaque (2013) have also found that customer involvement mediates the relationship between rapport and customer satisfaction in the banking industry. Given the significant effects of rapport and outcome quality on customer involvement and of customer involvement on perceived service quality, passenger participation is expected to mediate the relationships between outcome quality – cruise service quality, and social factors – cruise service quality. Consequently, this research proposes the following hypotheses:

H19: Passenger participation mediates the relationship between outcome quality and cruise service quality.

H20: Passenger participation mediates the relationship between social factors and cruise service quality.

3.3.6. Hypotheses Relating to Research Objective 6: Male and Female Passengers' Perceptions of the Research Constructs

This research assesses the differences between male and female passengers in terms of the research constructs. Previous research has shown that men and women have different perceptions of marketing constructs (Clemes et al., 2009; Radić, et al., 2019; Skogland & Siguaw, 2004). Radić et al. (2019) have demonstrated that gender differences exist in the perception of service performance in the cruise industry. Thus, this research tests the following hypotheses:

H21: Passengers' perceptions of the sub-dimensions of cruise service quality will differ based on gender.

H22: Passengers' perceptions of the primary dimensions of cruise service quality will differ based on gender.

H23: Passengers' perceptions of cruise service quality, cruise line image, passenger satisfaction, passenger loyalty and passenger participation will differ based on gender.

3.4. Summary

This chapter provides information about the proposed model of cruise service quality and its relationships with cruise line image, passenger satisfaction and passenger loyalty. The proposed mediating roles of cruise line image and passenger participation in the research model were also reviewed. Finally, this chapter lists 23 hypotheses pertaining to the proposed relationships. The next chapter deals with the research methodology used in this study.

Chapter 4

Research Methodology

4.1. Introduction

Chapter 4 discusses the research methodology and the four steps that have been performed. The first two steps involve choosing an appropriate research design and creating a questionnaire. The next step deals with the sampling method and data collection procedures. The final step relates to data analysis procedures. The following sections provide a detailed explanation of each of these steps.

4.2. Research Design

Research design refers to the plan that guides researchers in the fulfilment of data collection and data analysis (Zikmund, Babin, Carr & Griffin, 2010). Malhotra, Birks and Wills (2012) divide research designs into two categories: exploratory research and conclusive research. The current research applied both research designs; in accordance with many marketing studies (e.g., Brady & Cronin, 2001; Channoi et al., 2018; Clemes et al., 2020). Exploratory research is typically employed to refine the understanding of a research construct. Exploratory research can involve a number of methods including expert surveys, pilot surveys, secondary data, qualitative interviews, unstructured observations, and quantitative exploratory multivariate methods (Malhotra, Nunan & Birks, 2017). The current research used extant empirical evidence (literature review), qualitative interviews (dyadic interviews), and pre-testing (expert surveys and pilot surveys) to refine the constructs, establish measurement, and develop the questionnaire (See Section 4.3.1).

Conclusive research is used to test hypotheses and to evaluate the measurement of constructs and examine the relationships between those constructs (Malhotra et al., 2012). Conclusive research typically uses surveys and quantitative analysis for construct measurement and evaluation as well as data analysis (Malhotra et al., 2017). A survey is a technique used to gather respondents' perceptions of research constructs via a structured interview or questionnaire (Cooper & Schindler, 2014). The purpose of conducting a survey is to collect as many relevant responses as possible, in the most efficient and accurate manner (Hair, Black, Babin & Anderson, 2010, Zikmund et al., 2010). A survey can be conducted using several methods: online surveys, telephone surveys, face-to-face surveys, and postal surveys (Malhotra et al., 2012). The current research employed face-to-face surveys method. Researchers can assess participants' attitudes towards the data collection questions and

help to eliminate any confusion that arises using face-to-face surveys. The face-to-face method also allows researchers to ensure that respondents provide meaningful responses. In terms of data analysis, this research employed quantitative analysis, since it can be used to test the construct validity and the relationships between constructs (Ang, 2014; Bryman & Bell, 2011).

4.3. Questionnaire Development

A questionnaire is a research tool used to obtain information, and in this research, it was from cruise passengers. Questionnaire development follows a careful and well-established process: (1) determining construct operationalisation, (2) designing the questionnaire, (3) pre-testing, and (4) organising the layout of the final draft questionnaire (Aaker, Kumar, Day & Leone, 2010; Zikmund et al., 2010). Researchers gain considerable advantages from creating questionnaires that are meaningful and reliable and encourage participants to complete the questionnaire and provide accurate data (Malhotra et al., 2012).

4.3.1. Construct Operationalisation

A construct is multifaceted concept that is described by indicator items. The process of designing indicator items relies on two resources: a comprehensive literature review and qualitative interviews (Hair et al., 2010; Stevens, Wrenn, Sherwood & Ruddick, 2006). Reviewing related literature enables researchers to choose appropriate indicator items (Ang, 2014). The indicator items for each construct in the current research were drawn from relevant research discussed in Chapter 2.

When indicator items cannot be drawn directly from the literature, qualitative interviews can be used to confirm the relevance of indicator items, especially when the research is applied to a unique or new research setting (Churchill, 1979). Qualitative interviews can be organised into several categories: focus group discussions, dyadic interviews, and individual interviews (Brinkmann, 2013). The current research used dyadic interviews as this method offers advantages over the other interview types. The dyadic interview procedures are discussed in the following sub-section.

4.3.1.1. Dyadic Interview Procedures

A dyadic interview is a lively discussion on a certain topic between two participants, moderated by an interviewer (Brinkmann, 2013). Dyadic interviews appear to be gaining popularity. Prior research on health (Morgan, Ataie, Carder & Hoffman, 2013; Morgan, Elliot, Lowe & Gorman, 2016), marketing (Greenbaum, 1997; Mariampolski, 2001) and management (Putra & Cho, 2019) have used dyadic interview as a substitute for focus group discussion. Traditionally, marketing scholars have relied on focus group discussions to define and develop a construct's indicator items (Churchill, 1979; Hennink,

2014). Focus group discussions often include from six to eight people (Hennink, Hutter & Bailey, 2011).

Scholars' changing preferences from focus group discussions to dyadic interviews can be traced to four reasons. Firstly, the dyadic interview is similar to a focus group in that it shares and compares participant views about a research topic (Morgan et al., 2013). Secondly, dyadic interviewers are easier to organise than the six or eight people in a focus group (Brinkmann, 2013). Thirdly, in the same time period, dyadic interview participants have more time to share their opinions than those participating in a focus group (Morgan et al., 2016). Lastly, dyadic interviews often provide more detailed information than focus group discussions (Krueger, 2013).

Three dyadic interviews were conducted in Lincoln, New Zealand to confirm the measurement items of cruise service quality. All participants in the dyadic interviews had been on a cruise holiday within the previous year and were over 18 years of age. Scholars contend that only people who have experience in the phenomenon under research should be included in the qualitative interviews (Greenbaum, 1997; Hennink, 2014).

In terms of the dyadic process, Brinkmann's (2013) dyadic interview procedures were followed. To start, the interviewer provided participants with a brief description of the cruise service quality primary dimensions. The interviewer then facilitated discussion of each of the primary dimensions in order to discover hidden aspects of the dimensions. Participants noted the same aspects identified in the literature review. For interaction quality, participants emphasised the importance of the crew's attitude and behaviour. In terms of physical environment quality, they stressed the importance of impressive performances, the availability of security personnel and the cleanliness of the cabins. When discussing outcome quality and social factors, participants emphasised the availability of high-quality food and spacious public spaces (that is, decks and pools). The dyadic interviews were recorded and transcribed. The findings from the dyadic interviews, together with literature review, were employed to generate the measurement items in the questionnaire.

4.3.2. Questionnaire Design

Scholars divide survey questions into two categories: unstructured and structured questions (Cooper & Schindler, 2014). Unstructured questions, also called open-ended questions, are questions that respondents can answer in the appropriate manner, for example, with several words or a paragraph. In contrast, structured questions are closed-ended questions. Researchers provide multiple choices for answering the question. The questionnaire in this research contained structured questions.

As this research aims to examine cruise passengers' perceptions of marketing constructs, a scaling technique was needed to transform the perceptions into numerical values. This research employed Likert scales to evaluate passengers' degree of agreement with each indicator item (Malhotra et al., 2012). The numerical scores ranged from 1 to 7, where 1 = 'strongly disagree' and 7 = 'strongly agree'. The questionnaire contained two types of information which were organised in the following order: basic information and classification information. Basic information covered all indicator items for each research construct. Classification information included respondents' demographic data and these questions were included in the later sections of the questionnaire, as classification information is deemed sensitive information (Suhartanto, 2011).

4.3.3. Pre-testing Procedure

A pre-test is useful for identifying the reliability and content validity of indicator items prior to data collection (Aaker et al., 2010; Malhotra et al., 2012). Reliability refers to the internal consistency of indicator items used to measure a construct (Osborne, 2014). Content validity refers to an indicator item's ability to communicate construct's theory effectively (Hair et al., 2010; Zikmund et al., 2010). Researchers need to follow two steps when conducting a comprehensive pre-test (Hair et al., 2010). In this research, the first step was asking two marketing experts and two cruise experts about the appropriateness of the questionnaire. The purpose of this stage was to confirm the validity of the content. Based on the experts' suggestions, basic modifications were made to the questionnaire. Secondly, the researcher gathered 30 usable questionnaires to measure items' reliability. All the respondents were part of the research population (that is, people who were on a medium, large or mega cruise ship holiday and were at least 18 years of age). The Cronbach's alpha score must be equal to, or higher than, 0.70 to achieve reliability (Hair et al., 2010; Nunnally, 1978). The alpha scores indicate that all the constructs were reliable. After completing these steps, the final draft of the questionnaire was organised.

4.3.4. Layout of the Final Draft Questionnaire

The final questionnaire included a cover letter and six sections (See Appendix 1). The cover letter contained a brief description of the research objectives and an assurance of respondent confidentiality. Sections A, B, C, and D contained the indicator items of interaction quality, physical environment quality, outcome quality, and social factors, respectively. Section E contained the indicator items of cruise service quality, cruise line image, passenger satisfaction, passenger loyalty, and passenger participation. Section F contained respondent's demographic information. The contents of each section are outlined below.

4.3.4.1. Section A

As previously discussed, this research proposes four sub-dimensions of interaction quality (that is, attitude, behaviour, expertise, and problem solving). Five items were used to measure attitude, five items were used to measure behaviour, four items were used to measure expertise, four items were used to measure problem solving, and three items were used to measure customer overall perceptions of interaction quality (See Appendix 2 for item references). Details of the items are presented in Table 4.1.

Table 4.1. Questionnaire Items for Measuring Interaction Quality

Constructs	Item No.	Description
Attitude	Att1	The crew are welcoming.
	Att2	The crew are friendly.
	Att3	The crew are polite and courteous.
	Att4	The crew are patient when interacting with passengers.
	Att5	The attitude of the crew demonstrates their willingness to help me.
Behaviour	Bev1	The crew responds quickly to address my needs.
	Bev2	The crew always provide a prompt service.
	Bev3	The crew use the appropriate body language when they interact with me.
	Bev4	I receive individual attention from the crew when I have specific needs.
	Bev5	The crew do whatever is necessary to satisfy my needs.
Expertise	Expert1	The crew display good working skills.
	Expert2	The crew are knowledgeable when answering my questions.
	Expert3	The crew are professional and well trained.
	Expert4	The crew have good communication skills.
Problem solving	Solve1	When I have a problem, the crew shows a sincere interest in solving it.
	Solve2	The crew understand the importance of resolving my problems.
	Solve3	The crew try to handle my complaints directly and immediately.
	Solve4	This cruise ship has an effective service recovery system for resolving complaints.
Interaction quality	IQ1	The crew deliver superior services.
	IQ2	The interaction I have with the crew is excellent.
	IQ3	I feel good about the interaction I have with the crew.

4.3.4.2. Section B

This research proposes five sub-dimensions of physical environment quality (room facilities; entertainment facilities; recreation, sport, fitness and health facilities; dining and bar facilities; and safety and security). Three items were used to measure room facilities, three items were used to measure entertainment facilities, three items were used to measure recreation-sport-fitness-health facilities, three items were used to measure dining-bar facilities, four items were used to measure safety-security, and three items were used to measure customer overall perceptions of physical

environment quality (See Appendix 2 for item references). Details of the items are presented in Table 4.2.

Table 4.2. Questionnaire Items for Measuring Physical Environment Quality

Constructs	Item No.	Description
Room facilities	Room1	The cabin on this cruise ship is clean.
	Room2	The bathroom and toilet in the cabin are clean.
	Room3	The bed, mattress and pillow in the cabin are comfortable.
Entertainment facilities	Enter1	This cruise ship provides a variety of up-to-date entertainment equipment in the entertainment spaces (e.g. casino, night clubs, bars/lounges).
	Enter2	The equipment of entertainment spaces on this cruise ship is in good condition.
	Enter3	This cruise ship provides enjoyable parties and performances.
Recreation, sport, fitness and health facilities	Recre1	This cruise ship has adequate recreation and sport facilities that I require (e.g. wall climbing, run/walking track, and miniature golf).
	Recre2	This cruise ship has adequate fitness and health facilities that I require (e.g. spa, fitness centre, and swimming pool).
	Recre3	The equipment of recreation centre and fitness centre on this cruise ship is in good condition.
Dining and bar facilities	Dine1	The restaurants and bars on this cruise ship are clean.
	Dine2	The dining table and seats of restaurants and bars on this cruise ship are comfortable.
	Dine3	The quality of tableware in the restaurants and bars on this cruise ship is good.
Safety and security	Safe1	There are ample fire alarms on this cruise ship.
	Safe2	The lifejackets are available in my cabin on this cruise ship.
	Safe3	There are trained security personnel on this cruise ship.
	Safe4	There is a secure safe available on this cruise ship.
Physical environment quality	PEQ1	I feel comfortable in the physical environment of this cruise ship.
	PEQ2	The physical environment of this cruise ship is excellent.
	PEQ3	I am impressed with the quality of physical environment on this cruise ship.

4.3.4.3. Section C

This research proposes three sub-dimensions of outcome quality (an enjoyable time, high quality food, and carefree on-board experience). Three items were used to measure an enjoyable time, three items were used to measure high quality food, three items were used to measure carefree on-board experience, and three items were used to measure customer overall perceptions of outcome quality (See Appendix 2 for item references). Details of the items are presented in Table 4.3.

Table 4.3. Questionnaire Items for Measuring Outcome Quality

Constructs	Item No.	Description
Enjoyable time	Enjoy1	My stay on this cruise ship is an enjoyable experience.
	Enjoy2	I have fun experience with my friends/family when I stay on this cruise ship.
	Enjoy3	I feel there is romantic environment on this cruise ship.
High quality food	Food1	This cruise ship serves a variety of food and beverages.
	Food2	This cruise ship serves attractive and tempting food and beverages.
	Food3	The quality of food and beverage on this cruise ship is excellent.
Carefree on-board experience	Carefree1	When I am on this cruise ship, I can escape from the pressures of daily life.
	Carefree2	My stay on this cruise ship is leisurely and stress-free.
	Carefree3	Staying on this cruise ship is relaxing.
Outcome quality	OQ1	I believe taking a holiday on this cruise ship is worthwhile.
	OQ2	I generally feel good about my cruise ship experience.
	OQ3	Overall, I have received the desired outcome by choosing this cruise ship.

4.3.4.4. Section D

This research proposes three sub-dimensions of social factors (social interactions with crew, social interactions with other passengers, and social density). Four items were used to measure social interactions with crew, three items were used to measure social interactions with other passengers, four items were used to measure social density, and three items were used to measure customer overall perceptions of social factors (See Appendix 2 for item references). Details of the items are presented in Table 4.4.

Table 4.4. Questionnaire Items for Measuring Social Factors

Constructs	Item No.	Description
Social interactions with crew	Crew1	I tend to relax easily with the crew.
	Crew2	I feel very comfortable in the presence of the crew.
	Crew3	I feel as though I am well regarded by the crew.
	Crew4	The crew makes me feel important.
Social interactions with other passengers	Pass1	I have developed friendships with other passengers that I met on this cruise ship.
	Pass2	I enjoy spending time with other passengers on this cruise ship.
	Pass3	The other passengers on this cruise ship make my stay more enjoyable.
Social density	Density1	The public spaces around the pool are not over crowded.
	Density2	The public spaces around the decks on this cruise ship are not over crowded.
	Density3	The number of people on this cruise ship is about right.
	Density4	This cruise ship is not over crowded.
Social factors	SF1	I am pleased with my social interaction with the crew.
	SF2	I am pleased with my social interaction with other passengers.
	SF3	There is enough space on this cruise ship for fun and relaxation.

4.3.4.5. Section E

Section E contained four items to measure customer overall perceptions of cruise service quality, five items to measure cruise line image, four items to measure passenger satisfaction, four items to measure passenger loyalty, and three items to measure passenger participation (See Appendix 2 for item references). Details of the items are presented in Table 4.5.

Table 4.5. Questionnaire Items for Measuring Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, Passenger Loyalty, and Passenger Participation

Constructs	Item No.	Description
Cruise service quality	SQ1	The services provided by this cruise ship are of a high standard.
	SQ2	The overall services provided by this cruise ship are excellent.
	SQ3	The cruise ship delivers superior services in every way.
	SQ4	Overall, I am pleased with this cruise ship's service quality.
Cruise line image	Image1	This cruise line has a good reputation.
	Image2	This cruise line has a better image than its competitors.
	Image3	In my opinion, this cruise line has a good image in the minds of its passengers.
	Image4	In general, I believe that this cruise line always fulfils the promises it makes to passengers.
	Image5	Overall, I have a good impression of this cruise line.
Passenger satisfaction	Satisfy1	I made the right choice by taking a holiday on this cruise ship.
	Satisfy2	I feel delighted with the services delivered by this cruise ship.
	Satisfy3	My holiday experience on this cruise ship has satisfied my needs and wants.
	Satisfy4	Overall, taking holiday on this cruise ship is a satisfying experience.
Passenger loyalty	Loyal1	I will say positive things about this cruise ship to other people.
	Loyal2	I will recommend this cruise ship to my friends and colleagues who seek my advice about taking a cruise ship holiday.
	Loyal3	I intend to take another cruise package holiday offered by this cruise ship in the future.
	Loyal4	I will consider this cruise ship as my primary choice of cruise ship.
Passenger participation	Participate1	There are a variety of activities for me to participate in on this cruise ship.
	Participate2	The activities that I can participate on this cruise ship are interesting.
	Participate3	I can freely participate in various activities on this cruise ship.

4.3.4.6. Section F

Section F contained seven items for measuring the demographic variables: gender, age, educational level, occupation, nationality, annual household income, and a category which asked respondents whether they were first-time cruisers or repeat cruisers (See Appendix 1).

4.4. Sampling and Data Collection Methods

This section describes the techniques for choosing the sample and collecting the data.

4.4.1. Sample Derivation

The research sample included adult cruise passengers (18 years and older) who had good English skills, since the questionnaire was written in English. The passengers came from medium, large and mega cruise ships that visited Akaroa (New Zealand) and Benoa (Bali, Indonesia) port of calls during the 2017/2018 and 2018/2019 cruise seasons. There are some particular reasons for conducting the survey in both ports. First, Papathanassis (2012) emphasises the importance of conducting cruise surveys in multiple ports to decrease sampling error and the increase representativeness of the research findings. Second, both ports are located in popular destinations, i.e., Asia, and Australasia and the Pacific. These regions are the most rapidly growing cruising grounds in the world (Dowling & Weeden, 2017; Wondirad, 2019). Finally, there has been an increased number of visits from medium, large and mega cruise ships to the ports. Having completed a cruise ship terminal in early 2018, the port of Benoa was visited by 40 cruise ships in 2018 and 45 in 2019 (CrewCenter, 2017; 2018). Akaroa was visited by 92 cruise ships in the 2018/2019 season compared with 75 in the previous season (Akaroa and The Bays, 2018; Zealandier Tours, 2017). A list of all the cruise ships which visited both locations for the 2017/2018 and 2018/2019 cruise seasons is provided in Appendix 3.

At the time of survey, all respondents were holidaying on a cruise ship. This fact is important because passengers in the middle of a cruise provide more accurate responses to questionnaire items than passengers who have travelled sometime in the past (Lobo, 2008).

4.4.2. Sample Size

Researchers must calculate the necessary sample size in order to conduct effective research. They must consider what statistical analysis they intend to use before deciding on the sample size. The current research employed Exploratory Factor Analysis (EFA), Structural Equation Modelling (SEM) and an independent sample t-test to analyse the data. SEM consisted of two specific analyses: Confirmatory Factor Analysis (CFA) and the structural model. According to Schumacker and Lomax's (2004) and Kline's (2011), researchers should run EFA and CFA using a different data set. Schumacker and Lomax (2004, p.108) provide the following advice:

> *"In fact, a researcher could begin model generation by using exploratory factor analysis (EFA) on a sample of data to find the number and type of latent variables in a plausible model. Once a plausible model is identified,*

another sample of data could be used to confirm or test the model, that is, confirmatory factor analysis (CFA)."

In EFA, the total number of observed variables multiplied by five is considered a sufficient number of participants (Hair et al., 2010). Some scholars contend that EFA's sample must contain a minimum of 100 participants (Fabrigar & Wegener, 2012; Gorsuch, 1983). Meanwhile, the acceptable sample sizes in SEM ranges from 100 to 400 (Anderson & Gerbing, 1988; Boomsma, 1983). Hair et al. (2010) recommend 200 participants for SEM analysis. Thus, this research needed to collect 470 usable questionnaires (270 for EFA, and 200 for SEM and an independent sample t-test) since there are 54 observed variables for the EFA.

4.4.3. Data Collection Method

There are two techniques commonly used to select and collect the sample: probability and non-probability sampling. In the probability sampling, every person in the research population has an equal chance of being included in the sample (Aaker et al., 2010). Researchers perform a random selection. There are six possible methods for probability sampling: (a) simple random sampling, (b) systematic sampling, (c) stratified sampling, (d) proportional sampling, (e) disproportional sampling, and (f) cluster sampling.

In the case of non-probability sampling, researchers select sample based on certain criteria (e.g., age). There are four methods for non-probability sampling: (a) convenience sampling, (b) judgment sampling, (c) quota sampling, and (d) snowball sampling (Zikmund et al., 2010). Convenience sampling has been used in various service quality studies (Hapsari et al., 2017; Ladhari, Ladhari & Morales, 2011) because the sampling method enables researchers to gather a large amount of data in a short period of time. Convenience sampling is also relatively inexpensive (Cooper & Schindler, 2014). Convenience sampling chooses people in the population that are conveniently available (Zikmund et al., 2010). As this research needed 470 completed questionnaires, convenience sampling was the most appropriate method to use.

Cruise passengers (See Section 4.4.1) who visited the ports of Akaroa and Benoa at the time of surveying were approached and asked to complete a questionnaire. The data collection process took place over two cruise seasons: 2017/2018 (from the 17th of February 2018 to the 12th of June 2018) and 2018/2019 (from the 2nd of October 2018 to the 3rd of April 2019).

4.5. Data Analysis Procedure

Marketing research employs a wide variety of statistical analyses to test hypotheses and satisfy research objectives. This research employed the following statistical analyses: preliminary data analysis, EFA, SEM, and an independent sample t-test. The Statistical Package for the Social Sciences (SPSS, version 25) and the Analysis of Moment Structures (AMOS, version 24) programmes were used to perform the necessary statistical analyses. An explanation of each statistical analysis is provided below.

4.5.1. Preliminary Data Analysis

The initial stage of data analysis focused on data screening in order to ensure the quality and appropriateness of the data. There are four focal points in preliminary data analyses: missing data, outliers, non-response bias, and normality (Mustillo & Kwon, 2015; Tabachnick & Fidell, 2007). Missing data exists when participants do not complete the questionnaire. Outliers are defined as responses with a value which differs from the rest of the data. A non-response bias means that the data has systematic bias. Normality refers to the distribution of the data and, as its name suggests, considers whether the data is distributed 'normally' or not.

4.5.1.1. Missing Data

Missing data is an unavoidable problem in data collection. Missing data can affect the statistical power of the research findings (Vieira, 2017). Hair et al. (2010) suggest retaining any items where the missing data is less than 15% and using data imputation. Imputation refers to the process of imputing an appropriate value for each missing response to ensure a complete dataset. Statisticians recommend a variety of imputation techniques. The imputation techniques differ depending on the missing data patterns, specifically data that is Missing Completely At Random (MCAR), Missing At Random(MAR), and Missing Not At Random (MNAR). In this research, the missing data had a MNAR pattern (See 5.2.1). Thus, this research employed the multiple imputation with predictive mean matching technique. Multiple imputation is useful for dealing with MNAR (Meyers, Gamst & Guarino, 2013; Nassiri, Lovik, Molenberghs & Verbeke, 2018; Tabachnick & Fidell, 2007). Likewise, predictive mean matching is suitable for data obtained using Likert scales (McNeish, 2017).

4.5.1.2. Outliers

Marketing scholars look for two types of outliers in their primary data: univariate and multivariate outliers. A univariate outlier is an extreme point which loads on a single variable. In contrast, multivariate outliers refer to an unusual pattern of scores across several variables (Mertler & Reinhart, 2017). A univariate outlier has a standardised value (z-score) which is less than -4 or greater

than +4 (Hair et al., 2010). Cohen, Cohen, West and Aiken (2003) recommend retaining any data where the univariate outliers are less than 2% of the total sample. Mahalanobis distance (D^2) is a statistical procedure that is widely used to identify multivariate outliers (Stevens, 2001). The threshold values of $\frac{D^2}{df}$ are 3.5 or 4.0. df refers to degrees of freedom (Hair et al., 2010). Unlike univariate outliers, multivariate outliers must be deleted.

4.5.1.3. Non-Response Bias

Non-response bias occurs when there are systematic differences in responses between those who participate in the research and those who choose not to participate in the research. There are two benefits associated with the absence of non-response bias. Firstly, the absence of non-response bias shows that the sample adequately represents the population (Winter, 2010). Secondly, the absence of non-response bias proves that the application of the multiple imputation technique has not sacrificed the quality of the data set (Mustillo & Kwon, 2015). While non-response bias should be avoided, collecting information from non-respondents is problematic so scholars have instead developed methods to examine the collected data to search for evidence of non-response bias. Armstrong and Overton (1977) suggest using independent sample t-test to identify the difference of mean responses from early and late groups of sample. The non-response bias is confirmed when the means are significantly different.

4.5.1.4. Normality

There are two criteria used to identify whether data is normally distributed or not: skewness and kurtosis. While skewness relates to the symmetry of distribution, kurtosis describes the peak of distribution (Tabachnick & Fidell, 2007). Normal distribution is attained when the skewness and kurtosis values are in the ranges of -3 to 3 and -8 to 8, respectively (Chou & Bentler, 1995; Kline, 2011). Non-normal distribution can be dealt with data transformation. Data transformation is a strategy used to transform non-normal variables into a normal condition (Hair et al., 2010). There are numerous ways to perform data transformation including (a) square root, (b) logarithm, (c) inverse, (d) squared, (e) cubed, (f) reflect and square root, (g) reflect and logarithm, and (h) reflect and inverse (Hair et al., 2010; Tabachnick & Fidell, 2007). Researchers can select the most appropriate data transformation technique for their data.

4.5.2. Exploratory Factor Analysis (EFA)

Aaker et al. (2010) defines factor analysis as a statistical technique used to discover the underlying dimensions among a set of measured variables. Each dimension consists of variables which have high levels of correlation. In statistical terms, a dimension is known as a factor. There are two types of

factor analysis: exploratory factor analysis (EFA) and confirmatory factor analysis (CFA). Researchers typically use EFA when there is no theory or previous studies which outline the exact number of dimensions of a certain construct. In contrast, CFA is used when the dimensionality of the construct is clear (Fabrigar & Wegener, 2012). As cruise service quality was the only research construct which lacked sufficient prior studies on its dimensionality, this research adopted EFA to determine the dimensionality of cruise service quality. The following section discusses the six steps used to perform the EFA.

4.5.2.1. Step 1: Testing the Appropriateness of the Data Matrix for Factor Analysis

The data matrix is meaningless when there is no correlation between measured variables (Tabachnick & Fidell, 2007). To put it another way, researchers are unable to perform factor analysis when the data matrix displays zero correlation. There are several methods for identifying the appropriateness of the data matrix for factor analysis: these are (a) an examination of the correlation matrix, (b) an examination of the anti-image correlation matrix, (c) an examination of Bartlett's test of sphericity, and (d) an examination of the Kaiser-Meyer-Olkin measure of sampling adequacy. Details of each method are provided below.

a) Examination of the correlation matrix

In a data matrix, the correlation values range from 0 to 1. An acceptable data matrix has correlation values which are greater than 0.30; correlation values from 0 to 0.30 are considered unacceptable (Meloun & Militký, 2011).

b) Examination of the anti-image correlation matrix

In this method, researchers consider the partial correlation values. Partial correlation refers to the real correlation between two variables once the effect of the remaining variables has been removed (Tabachnick & Fidell, 2007). The partial correlation values are small when there are underlying factors (Field, 2009). SPSS produces an anti-image correlation matrix which reflects negative partial correlations. The appropriateness of the data matrix is indicated by the presence of many small values in the off-diagonal axis of the anti-image correlation matrix.

c) Examination of Bartlett's test of sphericity

The Bartlett's test of sphericity is another statistical technique used to detect the existence of correlation between measured variables (Hair et al., 2010). The data matrix is acceptable if the Bartlett's test of sphericity score is significant (<0.05) (Hinton, 2004). Moreover, the Bartlett's test of sphericity is only suitable for research which has a sample size greater than 150 (Meloun & Militký, 2011).

d) Examination of the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy

Researchers use the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy indexes to identify the level of intercorrelation between measured variables (Hair et al., 2010). Kaiser and Rice (1974) divide the indexes into following categories:

- ❖ Unacceptable: the index has a value below 0.50.
- ❖ Miserable: the index has a value of 0.50 or above.
- ❖ Mediocre: the index has a value of 0.60 or above.
- ❖ Middling: the index has a value of 0.70 or above.
- ❖ Meritorious: the index has a value of 0.80 or above.

4.5.2.2. Step 2: Selecting Factor Extraction Methods

Once researchers have a suitable data matrix, they can extract factors from their data. EFA provides two different methods of factor extraction: Common Factor Analysis (FA) and Principal Component Analysis (PCA) (Widaman, 2007). The function of FA is to expose the underlying factors of a certain construct, while PCA is used to transform a large set of measurement items into smaller factors (Aaker et al., 2010). As this research aims to determine the dimensionality of each cruise service quality primary dimension, FA was the most appropriate method of factor extraction. The SPSS 25 programme provides five different types of FA extraction: namely, Principal Axes Factor (PAF), Maximum Likelihood (ML), Unweighted Least Squares (ULS), Generalized Least Squares (GLS), and alpha extraction (Osborne, 2014). Researchers can choose any extraction method as long as it produces interpretable factors (Tabachnick & Fidell, 2007).

4.5.2.3. Step 3: Determining the Number of Factors to Extract

Determining the number of factors to extract is a challenging process, because it should result in theoretical and statistical utilities (Fabrigar & Wegener, 2012). Statisticians have used the following criteria to decide upon the number of factors to extract in EFA:

a) The eigenvalue or Kaiser criterion

In 1958, Kaiser has introduced the simplest criterion to determine the number of factors to use for EFA. Every factor which has an eigenvalue greater than one is considered a significant factor. Eigenvalue refers to the total of squared factor loadings (Osborne, 2014).

b) The percentage of variance criterion

The percentage of variance refers to the percentage of total variance that can be explained by the derived factors (Hair et al., 2010). This value indicates the practical significance of successive factors. Social science scholars accept a threshold of 60%.

c) The scree test criterion

In 1966, Cattell introduced a visual graph which is called a scree-plot to determine the number of factors for EFA. The scree test has been widely used in the subsequent studies (Fabrigar & Wegener, 2012; Meloun & Militký, 2011). Stewart (1981, p.58) explains the process of a scree test:

> *"A straight edge is laid across the bottom portion of the roots to see where they form an approximately straight line. The point where the factors curve above the straight line gives the number of factors, the last factor being the one whose eigenvalue immediately precedes the straight line"*

4.5.2.4. Step 4: Performing Factor Rotation

Unrotated factor solutions generally provide unworkable factor structures because the factor is difficult to interpret (Hair et al., 2010). Consequently, researchers need to perform factor rotation in order to obtain simple and clear factor structures (Spencer, 2014). Statistics scholars have developed two methods of factor rotation: orthogonal and oblique rotations (Tabachnick & Fidell, 2007). The orthogonal rotation method produces 90-degree angles between the X and Y axes, while the oblique method is not constrained by a 90-degree. SPSS provides three orthogonal rotation approaches (that is, VARIMAX, QUARTIMAX and EQUIMAX), and two oblique rotation approaches (that is, direct OBLIMIN and PROMAX). There are no particular rules to follow when choosing between the two methods. However, oblique rotation is believed to be superior in terms of generating interpretable factors (Hair et al., 2010).

4.5.2.5. Step 5: Interpreting the Derived Factors

A factor loading refers to the correlation between measured variables and factors (Aaker et al., 2010). The importance of the factor loading is determined by its score (the higher the score, the more important the factor). Hair et al. (2010) provide the following advice for evaluating factor loadings:

a) Factors loadings in the range of $\pm$ 0.30 to $\pm$ 0.40 are acceptable.
b) Factor loadings $\pm$ 0.50 and greater are practically significant.

c) Factor loadings ± 0.70 and greater are indicated well-defined structure.

Factor loadings also depend on sample size (Field, 2009). Hair et al. (2010) provide the guidelines for assessing the significance level of factor loadings on different sample sizes (See Table 4.6).

Table 4.6. Guidelines for Assessing the Significance Level of Factor Loadings on Different Sample Sizes

Factor Loading	Sample Size Needed for Significance	Factor Loading	Sample Size Needed for Significance
0.30	350	0.55	100
0.35	250	0.60	85
0.40	200	0.65	70
0.45	150	0.70	60
0.50	120	0.75	50

Source: Hair et al. (2010)

4.5.2.6. Step 6: Testing the Unidimensionality and Reliability

Once researchers identify the factor structures, they need to test the unidimensionality and reliability of each factor. A factor structure attains unidimensionality when every measured variable highly loads on a single factor (Neuman, 2011). The reliability is identified by the Cronbach's alpha score (Osborne, 2014). The score of Cronbach's alpha must be equal or higher than 0.70 (Hair et al., 2010).

4.5.3. Structural Equation Modelling (SEM)

This research used SEM to test the hypotheses. Scholars have identified benefits associated with SEM. Firstly, SEM is able to examine the reliability and validity of latent constructs (Hair et al., 2010). A latent construct is an unobservable variable which is defined by several indicator items (Jöreskog, Olsson & Wallentin, 2016). Most researchers have used latent constructs to represent their theoretical concept/s. There are 24 latent constructs in this research (See Figure 3.1). Secondly, SEM can examine the interrelationship between latent constructs simultaneously (Ullman, 2007). Finally, the regression coefficient in SEM indicates the true value (Byrne, 2010). In other statistical techniques, a regression coefficient consists of true coefficient and measurement error (Hair et al., 2010).

SEM is a combination of regression, path analysis, and CFA techniques (Kline, 2016; Schumacker & Lomax, 2004). Therefore, there is no pure history of SEM, instead it is the history of the three component techniques. In 1896, Pearson introduced a formula to calculate the correlation between two variables. Subsequent studies used Pearson's formula to develop regression concepts

(Schumacker & Lomax, 2004). Regression investigates the influence of an independent variable on a dependent variable. In 1921, Wright introduced path analysis to examine causal relationships among measured variables. In addition, Jöreskog (1969) developed CFA to test the validity of factor structure.

Having considered the three techniques, Jöreskog and van Thillo (1972) released the LISREL programme. LISREL is the SEM computer programme, along with AMOS, EQS and Mplus. The current research used AMOS as it is considered the most user-friendly SEM program. Researchers can freely choose between path diagrams (AMOS Graphics) and equation statements (AMOS VB NET and AMOS C#) when conducting SEM (Byrne, 2010).

SEM consists of two steps: the measurement model and the structural model (Hair et al., 2010). The measurement model examines the quality of the factor structure. The structural model examines the statistical and theoretical relationships among the latent constructs (Ullman, 2007). Jöreskog and Sörbom (1993) have stated that testing the structural model maybe meaningless without testing the measurement model. Details of the measurement model and the structural model are provided below.

4.5.3.1. Measurement Model

The measurement models in the current research employed a reflective factor model. Scholars have argued that reflective factor models are suitable for the measurement of psychological constructs (e.g. attitudes) (Bollen & Lennox, 1991; Diamantopoulos & Winklhofer, 2001; Fornell & Bookstein, 1982; Hardin, Chang & Fuller, 2008). Hair, Black, Babin, Anderson and Tatham (2006, p.786) note that *"A reflective measurement theory is based on the idea that latent constructs cause the measured variables and that the error results in an inability to fully explain these measured variables. Thus, the arrows are drawn from latent constructs to measured variables"*. In this case, dropping indicator items does not change the meaning of pertaining latent construct. Reflective factor models have been successfully employed in many service quality studies (Clemes, et al., 2014; Bakar et al., 2017; Channoi et al., 2018).

Researchers use CFA to assess the measurement model. CFA can verify the unidimensionality and the convergent validity of measured variables in a factor structure. As previously indicated, there is enough information about the exact number of factors in a latent variable when researchers apply CFA. The number of factors can be obtained from prior research or substantive theory (Jöreskog et al., 2016). In the case of this research, there was adequate knowledge about the dimensionality of cruise line image, passenger satisfaction, passenger loyalty, and passenger participation. For cruise

service quality, the measurement models were based on the EFA findings. Researchers need to perform CFAs on a different sample set in order to validate the EFA results (Hair et al., 2010).

The current research used two CFA models: first-order and second-order (See Chapter 5). The first-order CFA model aims to examine the causal relationships between the first-order latent variables and measured variables. The second-order CFA model aims to examine the causal relationships between the second-order latent variable and first-order latent variables (Kline, 2016). This research developed six first-order CFA models to measure interaction quality, physical environment quality, outcome quality, social factors, cruise service quality, and the five main constructs: cruise service quality, cruise line image, passenger satisfaction, passenger loyalty, and passenger participation. In addition, the two second-order CFA models were developed to measure (a) sub-dimensions of the primary dimensions and (b) cruise service quality.

The second-order CFA model for sub-dimensions applied the Partial Disaggregation (PD) method, since the model had many variables to measure. Bagozzi and Heatherton (1994) recommend the PD method for models which have numerous measured variables. The PD method can produce stable parameter estimates. Scholars have also argued that the PD method is suitable for second-order CFA model (Amiot, Terry, Jimmieson & Callan, 2006; Williams & O'Boyle, 2008). PD is defined as regrouping randomly measured variables under the same latent variable into two or three parcels (Little, Cunningham, Shahar & Widaman, 2002). There are two ways to calculate a parcel score: totalling or averaging selected measured variables (Bandalos & Finney, 2001).

In terms of process, there are six stages in SEM. They are: (a) model specification, (b) model identification, (c) model fit indices, (d) model modification, (e) unidimensionality analysis, and (f) testing construct validity. The following sections describe each stage in further detail.

4.5.3.1.1. Model Specification

Model specification refers to the process of transforming research hypotheses into a conceptual model (Kline, 2016). The conceptual model displays measured variables, latent variables, and the relationships between them. To design a conceptual model, one needs to consider previous research and related theories (Schumacker & Lomax, 2004). Byrne (2010) suggests the following rules for generating a conceptual model using SEM:

a) One of the factor loadings in every factor must be set to 1.0. The remaining factor loadings are freely estimated on the related factor and set to zero on the other factors.
b) In the first-order CFA model, all the parameters' covariances or variances must be correlated and freely estimated.

c) In the second-order CFA model, the covariations between first-order factors must be fully described by their regression on the higher-order factor.
d) The measurement error for each indicator must be uncorrelated.

4.5.3.1.2. Model Identification

SEM needs a conceptual model that provides a unique solution for each parameter (Ullman, 2007). Scholars have employed the t-rule to identify model characteristics (i.e., just-identified, over-identified, or under-identified) (Byrne, 2010). The t-rule uses the following formula:

$$Data\ points = \frac{p(p+1)}{2}$$

$$p = the\ number\ of\ observed\ variables$$

A just-identified model has an equal number of data points and estimable parameters. The condition of just-identified model is impossible for model modification since the model has zero degree of freedom (Schumacker & Lomax, 2004). Meanwhile, a model is considered over-identified when there are more data points than the number of estimable parameters. The over-identified model is the ideal model in SEM because researchers are able to modify the solution model to improve the model fit (Hair et al., 2010). Finally, a model is classified as under-identified when there are less data points than the number of estimable parameters. Scholars reject the under-identified model because there is no solution model (Schumacker & Lomax, 2004).

4.5.3.1.3. Model Fit Indices

Every measurement model in SEM should meet minimum Goodness-of-Fit (GOF) criteria. Hair et al. (2010) divide the GOF output into three categories: absolute fit indices, incremental fit indices, and parsimony fit indices. They have emphasised that a measurement model must meet the acceptable levels of at least one absolute index and one incremental index, along with chi-square (X^2) and degrees of freedom (df).

Absolute fit indices assess how well the sample data fit into the proposed model. Absolute fit indices include chi-square, Goodness-of-Fit Index (GFI), Root Mean Square Error of Approximation (RMSEA), Root Mean Square Residual (RMR), and Standardized Root Mean Square Residual (SRMR) (Hair et al., 2010). Incremental fit indices assess the measurement model against a baseline model (in other words, incremental fit indices can be used to check that there is no correlation among observed variables in the baseline model). These indices include Normed Fit Index (NFI), the Tucker-Lewis Index (TLI), the Comparative Fit Index (CFI), the Incremental Fit Index (IFI), and the Relative Noncentrality Index (RNI) (Byrne, 2010). Parsimony fit indices are also useful for deciding what

dimensionality model to use. These indices include normed chi-square (X^2/df), the Parsimony Goodness-of-Fit Index (PGFI), and the Parsimony Normed Fit Index (PNFI) (Schumacker & Lomax, 2004). This research used five GOF indices (SRMR, CFI, IFI, TLI, and normed chi-square), as recommended by Hu and Bentler (1999), Parasuraman, Zeithaml and Malhotra (2005), and Byrne (2010). Each of these indices is explained in greater detail below:

a) Standardized Root Mean Square Residual (SRMR)
   SRMR is defined as the average of the standardized residual between observed and predicted correlations (Kline, 2016). This index indicates a good model fit when the value is less than 0.1 (Hair et al., 2010).
b) Comparative Fit Index (CFI)
   In 1990, Bentler introduced CFI to overcome problems associated with the Normed Fit Index (NFI). The NFI value differs depending on the sample size (Byrne, 2010). For this reason, CFI has become one of the most widely used GOF indexes in SEM research (Kline, 2016). This index indicates a good model fit when the value is greater than 0.90 (Hopwood & Donnellan, 2010).
c) Incremental Fit Index (IFI)
   Bollen (1989) has proposed the Incremental Fit Index (IFI) in order to address concerns about the effect of sample size on an index's sensitivity. This index indicates a good model fit when the value is greater than or equal to 0.90 (Bagozzi & Edwards, 1998).
d) Tucker-Lewis Index (TLI)
   TLI is defined as a comparison between null and specified models' chi-squares (Hair et al., 2010; Tucker & Lewis, 1973). This index indicates a good model fit when the value is greater than 0.90 (Hopwood & Donnellan, 2010).
e) Normed chi-square
   Like IFI, the normed chi-square is not affected by sample size (Jöreskog, 1969; Kline, 2016). This index indicates a good model fit when the value is less than 5.0 (Bollen, 1989).

4.5.3.1.4. Model Modification

A researcher must perform model modification when the measurement model is unfit. Model modification may involve adding or freeing some measured variables (Ullman, 2007). Model modification is used to improve model fit and to ensure that the results are interpretable (Jöreskog et al., 2016). Wang and Wang (2012) emphasise that model modification must balance both statistics and theory. Researchers can use standardized residuals and modification indices to detect the cause of an unfit model (Byrne, 2010). The standardized residuals matrix assesses the absolute difference scores between the observed covariance matrix and the model-implied covariance matrix (Schumacker & Lomax, 2004). A good fit model has standardized residuals less than 1.96 or 2.58

(Schumacker & Lomax, 2004). If the standardized residuals scores are higher than this, there is a problem in the measurement model.

In 1986, Sörbom has introduced Modification Indices (MI) that indicate the extent by which a chi-square will decrease if a particular measured variable is deleted. Decreasing chi-square enables a good model fit. Scholars should delete a measured variable which has a high MI score (Jorgensen, 2017; Perry, Nicholls, Clough & Crust, 2015). However, there is no accepted threshold for the MI (Wang & Wang, 2012). MacCallum, Roznowski and Necowitz (1992) have proposed a procedure to modify the measurement model using MI. A researcher needs to free the measured variable which has the biggest MI value and then evaluate the subsequent model. If the new model meets the goodness-of-fit criteria and is theoretically interpretable, then the model modification process is complete.

4.5.3.1.5. Unidimensionality Analysis

In CFA, unidimensionality analysis is performed prior to construct validity analysis (Anderson & Gerbing, 1991). If the model meets the CFI threshold, then it is characterised as being unidimensional (Byrne, 2010).

4.5.3.1.6. Construct Validity

As previously indicated, construct validity refers to measured variables' abilities to communicate the theories effectively (Zikmund et al., 2010). There are two elements of construct validity: convergent validity and discriminant validity. Convergent validity is defined as the extent of correlation between measured variables and their ability to generate a common construct (Duckworth & Kern, 2011). Convergent validity can be assessed using three criteria: standardized factor loadings, average variance extracted, and construct reliability (Hair et al., 2010). All standardized factor loadings are expected to have statistical significance and have values 0.5 or higher (Anderson & Gerbing, 1988; Hair et al., 2010). The Average Variance Extracted (AVE) scores are also expected to be at least 0.5 (Hair et al, 2010). Finally, the threshold of acceptable Construct Reliability (CR) is 0.7 (Hair et al., 2010). Scholars have employed the following formula to calculate AVE and CR (Janssens, De Pelsmacker, Wijnen & Van Kenhove, 2008):

$$AVE = \frac{\sum(standardized\ loadings)^2}{\sum(standardized\ loadings)^2 + \sum measurement\ errors}$$

$$CR = \frac{(\sum standardized\ loadings)^2}{(\sum standardized\ loadings)^2 + \sum measurement\ errors}$$

Discriminant validity indicates that a latent variable differs from other latent variables (Farrell, 2010). Discriminant validity can be identified through the correlation scores between two latent variables, which must be less than 1.00 (Bagozzi & Heatherton, 1994). The high correlation scores (i.e., > 0.80) can produce multicollinearity (TAY, 2017) unless the model have high construct reliability (≥0.70), high R^2 (>0.25), and high sample sizes (ratio more than 3:1) (Grewal, Cote & Baumgartner, 2004; Mason & Perreault, 1991).

4.5.3.2. Structural Model

This phase tested the relationships between cruise service quality, cruise line image, passenger satisfaction, and passenger loyalty. Byrne (2010) defines the structural model as a theoretical model which represents the relationships (that is, direct or indirect) between proposed latent variables. The research hypotheses can be analysed using the information of goodness-of-fit, standardized factor loadings, and standardized path coefficients in the structural model. Hair et al. (2010, p.703) posit that *"...if the model shows good fit, and if the hypothesized paths are significant and in the direction hypothesized, then the model is supported"*.

4.5.3.3. Mediating Test

A mediating test was useful for analysing H17, H18, H19, and H20 (See Chapter 3). Baron and Kenny (1986) explain the two steps associated with mediation analysis. Firstly, a researcher must confirm the existence of a mediation effect in the structural model. The mediation effect can be identified through significant paths of (a) predictor variable (X) to the mediator variable (M) and (b) a mediator variable (M) to the criterion variable (Y). Secondly, a researcher must examine the type of mediation effect: that is, partial or full (Hair et al., 2010). Partial mediation occurs when there is a decrease in the relationship coefficient between X and Y when M is added but the relationship is still significant. Meanwhile, full mediation occurs when there is a decrease in the relationship coefficient between X and Y when M is added and the relationship becomes insignificant.

4.5.4. Independent Sample T-test Analysis

The last three hypotheses (H21, H22, and H23) were tested using independent sample t-test analysis. This test can be used to compare the means between two groups (in this case, male and female passengers), and to reveal gender's effect on cruise service evaluation. A significant t-test value (p value <0.05) indicates that the two groups have different mean scores (Vieira, 2017). However, a researcher needs to consider the existence of equality of variance. Variance is defined as the square of standard deviation (Tabachnick & Fidell, 2007). Equal variance is achieved when the 'Levene Test

for Equality of Variance' displays insignificant value ($p > 0.05$). In this situation, a researcher must use a t-test value from the "equal variances assumed" table (Vieira, 2017).

4.6. Summary

This chapter explains the methods used in this study. Specifically, the research design, questionnaire development, sampling and data collection methods were discussed. The chapter also reviews some statistical analysis techniques used to test the hypotheses. These techniques are exploratory factor analysis, structural equation modelling, mediation analysis, and an independent sample t-test. The next chapter deals with the research findings and hypotheses testing.

Chapter 5

Results

5.1. Introduction

This chapter outlines the research findings and hypotheses testing in accordance with the research methodology procedures discussed in Chapter 4. Chapter 5 includes three sections: (a) usable responses and preliminary data analysis, (b) respondents' demographic characteristics, and (c) data analysis interpretation.

5.2. Usable Responses and Preliminary Data Analysis

Interviewers were able to collect 514 completed questionnaires. Forty-one questionnaires were excluded since they had missing values greater than 10% (Hair et al., 2010). In total, there were 473 questionnaires used for preliminary data analysis. The preliminary data analysis included assessing missing data, outliers, non-response bias and normality.

5.2.1. Missing Data

Missing data analysis revealed that the current research's dataset had missing data that was not in random patterns. Therefore, the missing values for certain variables were systematic (Tabachnick & Fidell, 2007). Statisticians suggest deleting such problematic variables (Meyers et al., 2013), but Hair et al. (2010) advise researchers to keep any items with missing values less than 15%. As this was the case in this research, there were no item deletions. All missing values were imputed using the multiple imputation method of predictive mean matching (McNeish, 2017; Nassiri et al., 2018). This technique generates replacement items from the average of five imputed values (Dray & Josse, 2015; Nassiri et al., 2018).

5.2.2. Outliers

Univariate outlier analysis identified some problematic values, with z-scores less than -4 or greater than +4. However, these values were retained because they represented valid scores (that is, the Likert scale) and they represented less than 2% of the total sample size (Cohen et al., 2003). In terms of multivariate outliers analysis, the data had five cases which had a $\frac{D^2}{df}$ score greater than 4.0. These five cases were deleted.

With 468 complete and usable questionnaires, this research met the minimum sample requirements for EFA and SEM (Fabrigar & Wegener, 2012; Hair et al., 2010). EFA requires at least 200 samples from research having a moderate condition (Fabrigar & Wegener, 2012). The data for the current research was complied with the moderate condition since every latent variable was measured by at least 3 measurement items (Fabrigar & Wegener, 2012). The SEM also requires a sample size of at least 200 (Hair et al., 2010). The entire sample was then randomly split into two sub-samples (268 for EFA and 200 for SEM). The SEM's sample was also subjected to an independent sample t-test for the purpose of testing the hypotheses.

5.2.3. Non-Response Bias

A study is considered free from non-response bias when the early and late samples have statistically similar means. Based on the data collection time frame, the number of early and late samples in this study were 218 and 250, respectively. This study conducted an independent sample t-test on the two groups constructs' mean scores (see Table 5.1). The groups have equal variances and similar means since Levene's test for equality of variances and the t-test for equality of means for all constructs are insignificant (> 0.05) (Vieira, 2017). Therefore, the data set was free from non-response bias.

Table 5.1. Non-Response Bias Test

Construct	Levene's Test for Equality of Variances		T-test for Equality of Means (Significant at 5%)				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. error Difference
Interaction quality	0.452	0.502	-0.712	466	0.477	-1.02769	1.44437
Physical environment quality	1.620	0.204	-1.077	466	0.282	-1.24561	1.15638
Outcome quality	0.177	0.674	-0.088	466	0.930	-0.07727	0.87363
Social factors	1.113	0.292	0.277	466	0.782	0.30235	1.09076
Service quality	0.716	0.398	-0.653	466	0.514	-0.22175	0.33966
Cruise line image	3.112	0.078	-0.330	466	0.742	-0.15192	0.46051
Passenger satisfaction	2.203	0.138	-0.275	466	0.783	-0.11190	0.40625
Passenger loyalty	2.036	0.154	-0.571	466	0.568	-0.28178	0.49349
Passenger participation	1.113	0.292	-0.641	466	0.522	-0.19706	0.30747

5.2.4. Normality

The current research performed normality test on each sub-sample. Several variables had non-normal distribution in both datasets. Consequently, this research employed two data transformation techniques ((a) cubed and (b) reflect and inverse) to solve the problem (Hair et al., 2010). After the transformation, all the variables had normal distributions (See Appendix 4).

5.3. Respondents' Demographic Characteristics

Table 5.2 presents the 468 respondents' demographic characteristics. This study surveyed male and female respondents in roughly equal proportions. Most respondents were baby boomers, aged between 54 and 72 at the time of the survey. The baby boomers were born between 1946 and 1964 (Sheehan, 2011); they prefer luxury, customized, hassle-free, and pleasure holidays (Dowling &Vasudavan, 2000). Dowling and Weeden (2017) report that most cruisers fall into the baby boomer category.

In terms of occupation, most respondents were retired (67.1%). Respondents had varying levels of education, ranging from high school qualifications to PhD. A third of the respondents have a high school diploma and over half have either a university degree or graduate degree. This finding is consistent with Forgas-Coll et al.'s (2014) and Han and Hyun's (2018) studies on the Mediterranean and U.S. cruise industries, respectively.

With respect to the nationality, over 50% of the respondents were Australian. Australia has had the largest cruise market penetration in the last decade (Dowling & Weeden, 2017). Cruise statistics in 2017 show that 1 in every 18 Australians took a cruise holiday (CLIA, 2017b). Finally, just as with many previous cruise studies (Chua, Lee, Kim & Han, 2019; Radic & Lück, 2018), the majority of respondents in this study had previously been on a cruise (90.2%).

Respondents' income information was not included in Table 5.2 because many respondents refused to answer questions related to their income; less than 50% answered questions about their income. Income is a sensitive topic and respondents often do not answer questions about how much they earn (Malhotra et al., 2017; Nancarrow & Brace, 2008; Tourangeau & Yan, 2007). Of the respondents who did answer the income question, most had annual incomes higher than 50,000 NZD.

Table 5.2. Respondents' Demographic Profile (N=468)

Demographic Characteristics	Options	Frequency	Percentage (%)
Gender	Male	232	49.6
	Female	236	50.4
Age	18-25	1	0.2
	26-35	11	2.4
	36-45	7	1.5
	46-55	26	5.6
	56-65	124	26.5
	65+	299	63.9
Educational level	High school	175	37.4
	Diploma degree	77	16.5
	Bachelor degree	99	21.2
	Master degree	52	11.1

	PhD degree	18	3.8
	Other	47	10.0
Occupation	Student	3	0.6
	Professional	67	14.3
	Business owner	25	5.3
	Government officer	9	2.0
	Retired	314	67.1
	Housewife	15	3.2
	Other	35	7.5
Nationality	New Zealand	52	11.1
	Australia	236	50.4
	USA	69	14.7
	Canada	19	4.1
	British	63	13.5
	Other	29	6.2
First-timer cruiser	Yes	46	9.8
	No	422	90.2

As this study was conducted in Indonesian and New Zealand ports, respondents' demographic characteristics may differ between the two ports. Fortunately, respondents who visited both ports have similar demographic characteristics. There was an equal proportion of male and female respondents. Most respondents were baby boomers, retired and well educated. The sample was dominated by Australians and repeat cruisers.

5.4. Data Analysis Interpretation

EFA and SEM were used to analyse the 268 and 200 samples, respectively. The researcher also used the independent sample t-test to analyse the latter sample. The following sections report the results of data analysis and hypotheses testing.

5.4.1. The Exploratory Factor Analysis (EFA) Results for the Four Primary Dimensions

This section outlines the EFA results for cruise service quality's sub-dimensions pertaining to each primary dimension (interaction quality, physical environment quality, outcome quality, and social factors).

5.4.1.1. The EFA Results for Interaction Quality

Originally, 18 items were proposed to measure four sub-dimensions of interaction quality: attitude, behaviour, expertise, and problem solving. The first step of EFA was testing the appropriateness of the data matrix. The results revealed that the data matrix was appropriate for EFA since (a) all of the correlation values in the correlation matrix were greater than 0.3 (Hair et al., 2010), (b) most of the

partial correlation values in the anti-image correlation matrix were small (Field, 2009), (c) the Bartlett's test of sphericity was significant ($p<0.05$) (Hinton, 2004), and (d) the KMO MSA index was meritorious (0.956) (Kaiser & Rice, 1974).

The next step of EFA was to determine the number of factors to extract. The results revealed that there were two factors which have eigenvalues greater than one (Osborne, 2014). The percentage of variance for the two factors was greater than 60% (68.240%) (Hair et al., 2010). In addition, the scree plot also displayed two factors (See Figure 5.1) (Stewart, 1981). Thus, the 18 items loaded on two factors.

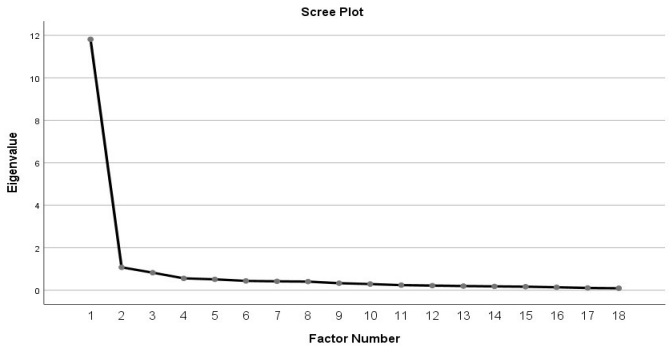

Figure 5.1. The Scree Plot (Interaction Quality)

Factor rotation was performed using the ULS method and PROMAX rotation for the purpose of generating interpretable factor structures. The ULS PROMAX rotation results revealed two sub-dimensions of interaction quality, but there were two cross-loading items (Bev2 and Bev3). Cross-loading item is problematic because it has significant factor loadings on more than one factor (Hair et al., 2010). Cross-loading items need to be eliminated to satisfy the requirements of unidimensionality (Neuman, 2011). Finally, sixteen items were retained.

The researcher then conducted an EFA for the remaining 16 items and obtained an acceptable data matrix (See Appendix 5). All the correlation values in the correlation matrix were greater than 0.3. Most of the partial correlation values in the anti-image correlation matrix were small. The Bartlett's test of sphericity was significant ($p<0.05$) and the KMO MSA index was meritorious (0.951).

The 16 items were extracted into two factors since there were two factors which had eigenvalues greater than one. The percentage of variance for the two factors was 68.601%. The scree plot also displayed two factors (See Figure 5.2).

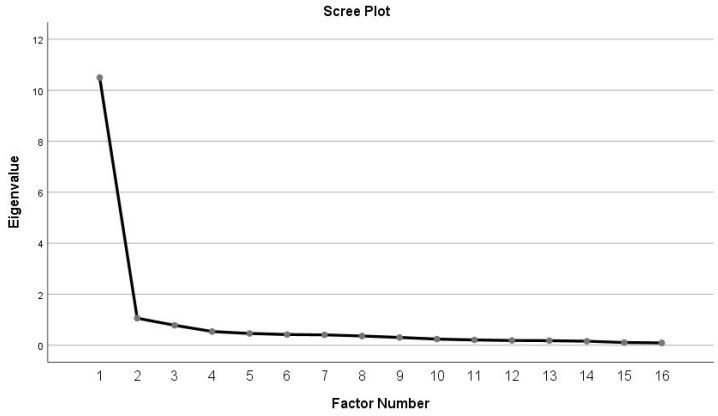

Figure 5.2. The Scree Plot of 16 Items (Interaction Quality)

In the factor rotation stage, the ULS PROMAX rotation results revealed two sub-dimensions of interaction quality and there were no cross-loading items (See Table 5.3). The 16 items loaded on two separate factors; Factor 1 had 11 items and Factor 2 had five items. All items had factor loadings greater than 0.35. Any factor loading over 0.35 was considered significant since the sample size was greater than 250 (Hair et al., 2010). Factor loadings ranged from 0.515 to 0.985. In terms of reliability, each factor had an acceptable Cronbach alpha score (0.950 and 0.943) (Nunnally, 1978).

The first sub-dimension was called professionalism (11 items) because it represented the crew's behaviour, expertise and problem-solving abilities (Channoi et al., 2018; Wilkinson, Wade & Knock, 2009). Channoi et al. (2018), in their study on beach resort hotels, defined two aspects of professionalism: expertise and problem solving. Wilkinson et al. (2009) indicate that service employees' behaviour is a dimension of professionalism. The second sub-dimension was attitude (5 items).

Table 5.3. The EFA Results for Interaction Quality (ULS PROMAX Rotation)

Items Code	Attributes	Factors	
		1	2
Bev1	The crew responds quickly to address my needs.	0.568	
Bev4	I receive individual attention from the crew when I have specific needs.	0.544	
Bev5	The crew do whatever is necessary to satisfy my needs.	0.706	
Expert1	The crew display good working skills.	0.515	
Expert2	The crew are knowledgeable when answering my questions.	0.821	
Expert3	The crew are professional and well trained.	0.691	
Expert4	The crew have good communication skills.	0.742	
Solve1	When I have a problem, the crew shows a sincere interest in solving it.	0.798	
Solve2	The crew understand the importance of resolving my problems.	0.801	
Solve3	The crew try to handle my complaints directly and immediately.	0.878	
Solve4	This cruise ship has an effective service recovery system for	0.602	

	resolving complaints.		
Att1	The crew are welcoming.		0.893
Att2	The crew are friendly.		0.874
Att3	The crew are polite and courteous.		0.985
Att4	The crew are patient when interacting with passengers.		0.714
Att5	The attitude of the crew demonstrates their willingness to help me.		0.702
	Eigenvalue	**10.496**	**1.061**
	Cronbach Alpha	**0.950**	**0.943**

5.4.1.2. The EFA Results for Physical Environment Quality

Originally, 16 items were proposed to measure five sub-dimensions of physical environment quality: (1) room facilities, (2) entertainment facilities, (3) recreation, sport, fitness, and health facilities, (4) dining and bar facilities, and (5) safety and security. The results revealed that the data matrix was appropriate for EFA (See Appendix 6) as most of the correlation values in the correlation matrix were greater than 0.3, most of the partial correlation values in the anti-image correlation matrix were small, the Bartlett's test of sphericity was significant ($p<0.05$), and the KMO MSA index was meritorious (0.901).

The 16 items were then extracted into three factors. There were three factors which had eigenvalues greater than one. The percentage of variance for the three factors was 60.518% and the scree plot also displayed three factors (See Figure 5.3).

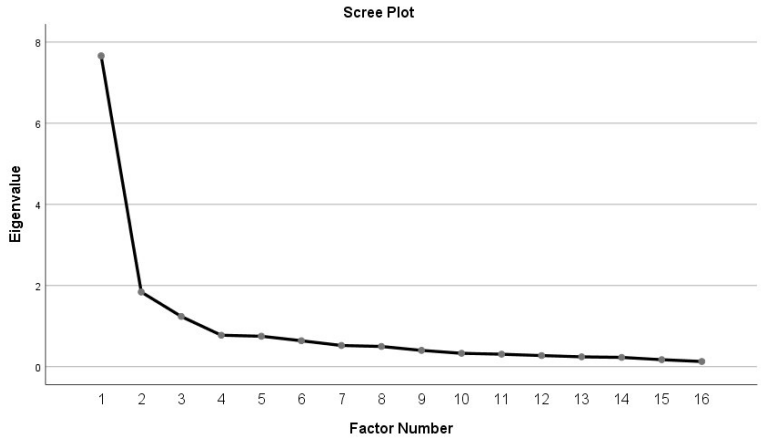

Figure 5.3. The Scree Plot (Physical Environment Quality)

In the factor rotation stage, the ULS PROMAX rotation results revealed three sub-dimensions of physical environment quality; there were no cross-loading items (See Table 5.4). The 16 items loaded on three separate factors. Factors 1, 2 and 3 had six, six and four items, respectively. All items had significant factor loadings ranging from 0.390 to 1.050. Each factor also had an acceptable Cronbach

alpha score (0.896; 0.880 and 0.837). The sub-dimensions were: (a) entertainment, recreation, sport, fitness, and health facilities (6 items); (b) room, dining, and bar facilities (6 items); and (c) safety and security (4 items).

Table 5.4. The EFA Results for Physical Environment Quality (ULS PROMAX Rotation)

Items Code	Attributes	Factors		
		1	**2**	**3**
Enter1	This cruise ship provides a variety of up-to-date entertainment equipment in the entertainment spaces (e.g. casino, night clubs, bars/lounges).	0.877		
Enter2	The equipment of entertainment spaces on this cruise ship is in good condition.	0.762		
Enter3	This cruise ship provides enjoyable parties and performances.	0.892		
Recre1	This cruise ship has adequate recreation and sport facilities that I require (e.g. wall climbing, run/walking track, and miniature golf).	0.835		
Recre2	This cruise ship has adequate fitness and health facilities that I require (e.g. spa, fitness centre, and swimming pool).	0.740		
Recre3	The equipment of recreation centre and fitness centre on this cruise ship is in good condition.	0.622		
Room1	The cabin on this cruise ship is clean.		0.966	
Room2	The bathroom and toilet in the cabin are clean.		1.050	
Room3	The bed/mattress/pillow in the cabin are comfortable.		0.413	
Dine1	The restaurants and bars on this cruise ship are clean.		0.458	
Dine2	The dining table and seats of restaurants and bars on this cruise ship are comfortable.		0.469	
Dine3	The quality of tableware in the restaurants and bars on this cruise ship is good.		0.390	
Safe1	There are ample fire alarms on this cruise ship.			0.504
Safe2	The lifejackets are available in my cabin on this cruise ship.			0.934
Safe3	There are trained security personnel on this cruise ship.			0.603
Safe4	There is a secure safe available on this cruise ship.			0.905
	Eigenvalue	**7.660**	**1.840**	**1.237**
	Cronbach Alpha	**0.896**	**0.880**	**0.837**

5.4.1.3. The EFA Results for Outcome Quality

Originally, nine items were proposed to measure three sub-dimensions of outcome quality: an enjoyable time, high quality food, and carefree on-board experience. The results revealed that the data matrix was appropriate for EFA because all of the correlation values in the correlation matrix were greater than 0.3, most of the partial correlation values in the anti-image correlation matrix were small, the Bartlett's test of sphericity was significant ($p<0.05$), and the KMO MSA index was meritorious (0.872).

The nine items were then extracted into two factors. There were two factors which had eigenvalues greater than one. The percentage of variance for the two factors was 70.868% and the scree plot also displayed two factors (See Figure 5.4).

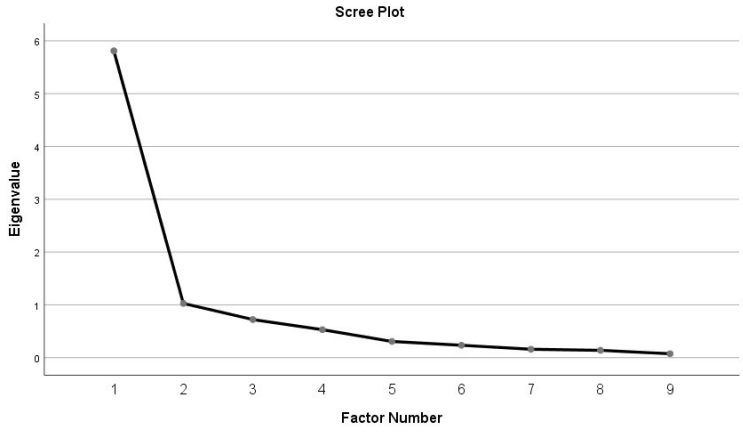

Figure 5.4. The Scree Plot (Outcome Quality)

The ULS PROMAX rotation results revealed two sub-dimensions of outcome quality. However, there were two cross-loading items (Enjoy1 and Enjoy2) and one low loading item (Enjoy3). Enjoy3 had a factor loading less than 0.35. The researcher eliminated the three items in order to satisfy the requirements for unidimensionality. Finally, there were six remaining items.

The researcher conducted EFA on the remaining 6 items and obtained an acceptable data matrix (See Appendix 7). All the correlation values in the correlation matrix were greater than 0.3. Most of the partial correlation values in the anti-image correlation matrix were small. The Bartlett's test of sphericity was significant ($p<0.05$), and the KMO MSA index was meritorious (0.803). The six items were then extracted into two factors. There were two factors which had eigenvalues greater than one. The percentage of variance for the two factors was 80.966% and the scree plot also displayed two factors (See Figure 5.5).

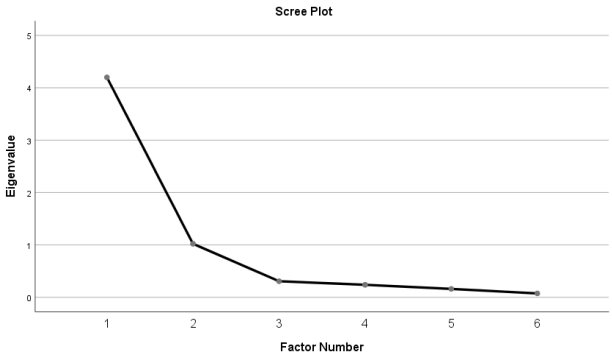

Figure 5.5.The Scree Plot of Six Items (Outcome Quality)

The ULS PROMAX rotation results revealed two sub-dimensions of outcome quality; there were no cross-loading items (See Table 5.5). The six items loaded on two separate factors. Both factors had three items. All items had significant factor loadings ranging from 0.790 to 1.038. Each factor also had an acceptable Cronbach alpha (0.939 and 0.907). The sub-dimensions were: (a) high quality food (3 items); and (b) carefree on-board experience (3 items).

Table 5.5. The EFA Results for Outcome Quality (ULS PROMAX Rotation)

Items Code	Attributes	Factors	
		1	2
Food1	This cruise ship serves a variety of food and beverages.	0.875	
Food2	This cruise ship serves attractive and tempting food and beverages.	1.038	
Food3	The quality of food and beverage on this cruise ship is excellent.	0.790	
Carefree1	When I am on this cruise ship, I can escape from the pressures of daily life.		0.798
Carefree2	My stay on this cruise ship is leisurely and stress-free.		0.873
Carefree3	Staying on this cruise ship is relaxing.		0.919
	Eigenvalue	**4.199**	**1.022**
	Cronbach Alpha	**0.939**	**0.907**

5.4.1.4. The EFA Results for Social Factors

Originally, 11 items were proposed to measure three sub-dimensions of social factors: (1) social interactions with crew, (2) social interactions with other passengers, and (3) social density. The results revealed that the data matrix was appropriate for EFA (See Appendix 8) because all the correlation values in the correlation matrix were greater than 0.3, most of the partial correlation values in the anti-image correlation matrix were small, the Bartlett's test of sphericity was significant ($p<0.05$), and the KMO MSA index was meritorious (0.861).

The 11 items were then extracted into three factors. There were three factors which had eigenvalues greater than one. The percentage of variance for the three factors was 76.985% and the scree plot also displayed three factors (See Figure 5.6).

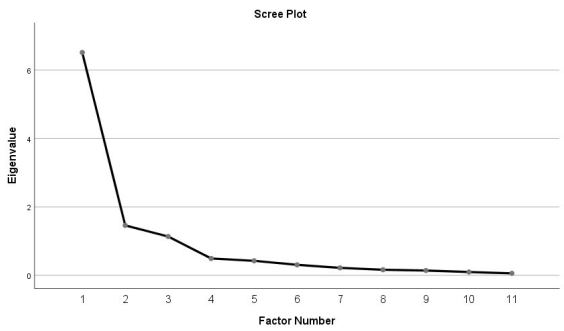

Figure 5.6. The Scree Plot (Social Factors)

In the factor rotation stage, the ULS PROMAX rotation results revealed three sub-dimensions of social factors; there were no cross-loading items (See Table 5.6). The 11 items loaded on three separate factors. Both Factor 1 and 2 had four items and Factor 3 had three items. All items' factor loadings were significant ranging from 0.593 to 0.997. Each factor also had an acceptable Cronbach alpha (0.928; 0.919 and 0.905). Factors 1, 2 and 3 were: social density, social interactions with crew; and social interactions with other passengers, respectively. Therefore, the sub-dimensions of social factors were the same as proposed.

Table 5.6. The EFA Results for Social Factors (ULS PROMAX Rotation)

Items Code	Attributes	Factors		
		1	**2**	**3**
Density1	The public spaces around the pool are not over crowded.	0.772		
Density2	The public spaces around the decks on this cruise ship are not over crowded.	0.887		
Density3	The number of people on this cruise ship is about right.	0.863		
Density4	This cruise ship is not over crowded.	0.954		
Crew1	I tend to relax easily with the crew.		0.929	
Crew2	I feel very comfortable in the presence of the crew.		0.989	
Crew3	I feel as though I am well regarded by the crew.		0.817	
Crew4	The crew makes me feel important.		0.593	
Pass1	I have developed friendships with other passengers that I met on this cruise ship.			0.731
Pass2	I enjoy spending time with other passengers on this cruise ship.			0.997
Pass3	The other passengers on this cruise ship make my stay more enjoyable.			0.851
	Eigenvalue	**6.516**	**1.459**	**1.134**
	Cronbach alpha	**0.928**	**0.919**	**0.905**

5.4.2. The Confirmatory Factor Analysis (CFA) Results

As noted in Chapter 4, this research employed two CFA models: first-order and second-order. The purpose of first-order CFA is to examine the relationships between the first-order latent variables and their measured variables. The second-order CFA aims to examine the relationships between the second-order latent variable and its first-order latent variables. The CFA results are presented in the following sub-sections.

5.4.2.1. The First-Order CFA Results for Primary Dimensions

The first-order CFA for primary dimensions aims to examine the relationships between the sub-dimensions of the four primary dimensions (interaction quality, physical environment quality, outcome quality, and social factors) and their measurement items.

5.4.2.1.1. The First-Order CFA Results for Interaction Quality

According to the EFA results, interaction quality had two sub-dimensions: professionalism (11 items) and attitude (5 items). There were 16 observed variables in the first-order CFA model for interaction quality. The model had 136 data points (16[16+1]/2), 33 estimable parameters (14 regression weights + 18 variances + 1 covariances), and 103 degrees of freedom (136-33). The model was classified as an over-identified model (See Figure 5.7).

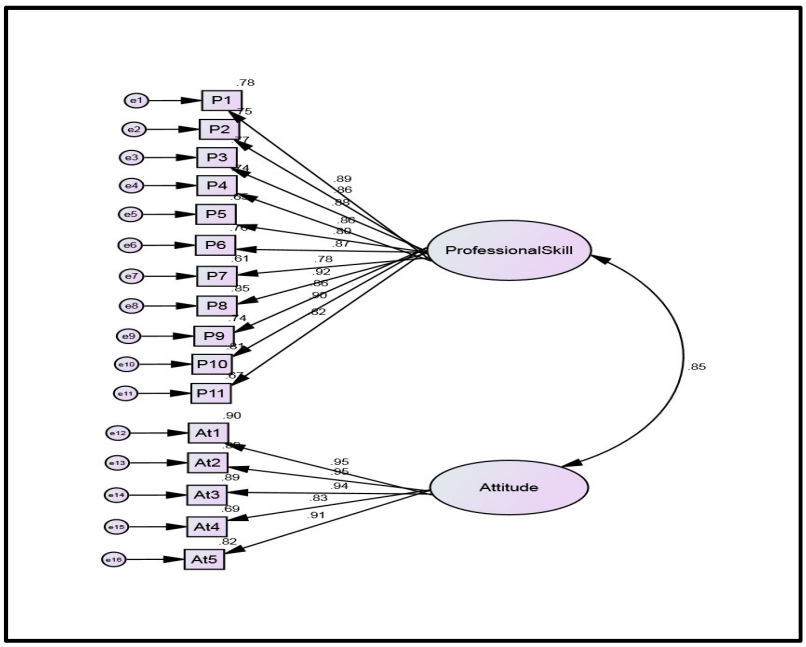

Figure 5.7. The First-Order CFA Model for Interaction Quality

The results revealed that the first-order CFA model for interaction quality met the Goodness-of-Fit (GOF) criteria and the unidimensionality requirements (See Table 5.7). A model meets the unidimensionality requirements when the CFI score is greater than 0.90 (Byrne, 2010). In terms of construct validity, the model was able to satisfy convergent validity and discriminant validity criteria. Table 5.8 shows that all the standardized factor loadings in the first-order CFA model for interaction quality were significant and higher than 0.5 (Anderson & Gerbing, 1988). The AVE and construct reliability scores were also higher than 0.5 and 0.7, respectively (Hair et al., 2010). Finally, the correlation between professionalism and attitude was less than 1.00 (0.854) (Bagozzi & Heatherton, 1994).

Table 5.7. The GOF Results of the First-Order CFA Model for Interaction Quality

Model Fit Indices	Value	Acceptable Level
X^2	413.429	
df	103	
SRMR	0.0442	Less than 0.1 (Hair et al., 2010)
CFI	0.924	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.924	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.911	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	4.014	Less than 5.0 (Bollen, 1989)

Table 5.8. The Construct Validity of the First-Order CFA Model for Interaction Quality

Construct	Items	Factor Loading	CR	AVE	Correlation
Professionalism	P1	0.885 (17.400)***	0.968	0.739	Prof < -- >Att: 0.854
	P2	0.865 (16.578)***			
	P3	0.879 (17.131)***			
	P4	0.858***			
	P5	0.805 (14.632)***			
	P6	0.871 (16.998)***			
	P7	0.784 (14.019)***			
	P8	0.923 (18.873)***			
	P9	0.860 (16.369)***			
	P10	0.902 (17.972)***			
	P11	0.820 (15.079)***			
Attitude	At1	0.946 (18.476)***	0.963	0.839	
	At2	0.945 (18.329)***			
	At3	0.944 (18.309)***			
	At4	0.833***			
	At5	0.908 (17.302)***			

( ) t value
*** Statistically significant at the 0.001 level (t > 3.291)
** Statistically significant at the 0.01 level (t > 2.576)
*Statistically significant at the 0.1 level (t > 1.645)

As the correlation value between the two latent variables (professionalism and attitude) was higher than 0.80, there was a possibility of multicollinearity issues (TAY, 2017). However, Grewal et al. (2004) demonstrated that high correlation between latent constructs can cause multicollinearity unless the constructs have strong reliability score (>0.70), high R^2 (>0.25), and high sample sizes (ratio higher than 3:1). Fortunately, the first-order CFA model for interaction quality satisfied these criteria and was therefore determined to be free from multicollinearity (See Table 5.9). In sum, professionalism and attitude were measured using 11 items and five items, respectively.

Table 5.9. Squared Multiple Correlation (R^2) of the First-Order CFA Model for Interaction Quality

Items	R^2	Items	R^2
P1	0.783	P9	0.740
P2	0.748	P10	0.814
P3	0.773	P11	0.673
P4	0.735	At1	0.895
P5	0.648	At2	0.893
P6	0.759	At3	0.891
P7	0.614	At4	0.695
P8	0.852	At5	0.824

5.4.2.1.2. The First-Order CFA Results for Physical Environment Quality

According to the EFA results, physical environment quality had three sub-dimensions: entertainment, recreation, sport, fitness, and health facilities (6 items), room, dining and bar facilities (6 items), and safety and security (4 items). There were 16 observed variables in the first-order CFA model for physical environment quality. The model had 136 data points (16[16+1]/2), 35 estimable parameters (13 regression weights + 19 variances + 3 covariances), and 101 degrees of freedom (136-35). Thus, the model was classified as an over-identified model (See Figure 5.8).

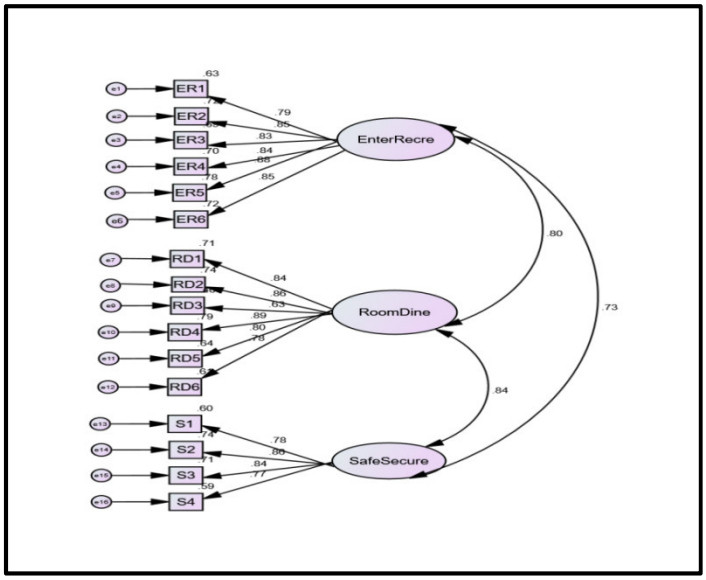

Figure 5.8. The First-Order CFA Model for Physical Environment Quality

The results revealed that the first-order CFA model for physical environment quality did not satisfy some GOF criteria (that is, CFI, IFI, and TLI). The model only fulfilled one absolute fit index (SRMR) and one parsimony fit index (the normed chi-square) (See Table 5.10). Hair et al. (2010) explain that a model must meet at least three GOF criteria, including one incremental index and one absolute

index. Consequently, the first-order CFA model for physical environment quality required modification.

Table 5.10. The GOF Results of the First-Order CFA Model for Physical Environment Quality

Model Fit Indices	Value	Acceptable Level
X^2	459.828	
df	101	
SRMR	0.0525	Less than 0.1 (Hair et al., 2010)
CFI	0.873	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.874	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.849	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	4.553	Less than 5.0 (Bollen, 1989)

This research evaluated the modification indices of each pair's items. The RD1 (*The cabin on this cruise ship is clean*) and RD2 (*The bathroom and toilet in the cabin are clean*) pair's items had the biggest modification indices (16.525). MacCallum et al. (1992) and Meyers et al. (2013) suggest deleting one of the problematic items to improve the model fit indices. Moreover, the item deletion should be less than 20% (Hair et al., 2010). The CFA revealed that the deletion of RD2 produced a fit model and the model met the unidimensionality requirements (See Table 5.11).

Table 5.11. The GOF Results of the First-Order CFA Modified Model for Physical Environment Quality

Model Fit Indices	Value	Acceptable Level
X^2	335.337	
df	87	
SRMR	0.0476	Less than 0.1 (Hair et al., 2010)
CFI	0.901	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.901	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.880	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	3.854	Less than 5.0 (Bollen, 1989)

Although the NFI and TLI of the modified model did not meet acceptable levels, the modified model satisfied the model fit criteria (at least three fit indices, including one absolute index and one incremental index). The modified model was also over-identified, with 87 degrees of freedom (See Figure 5.9).

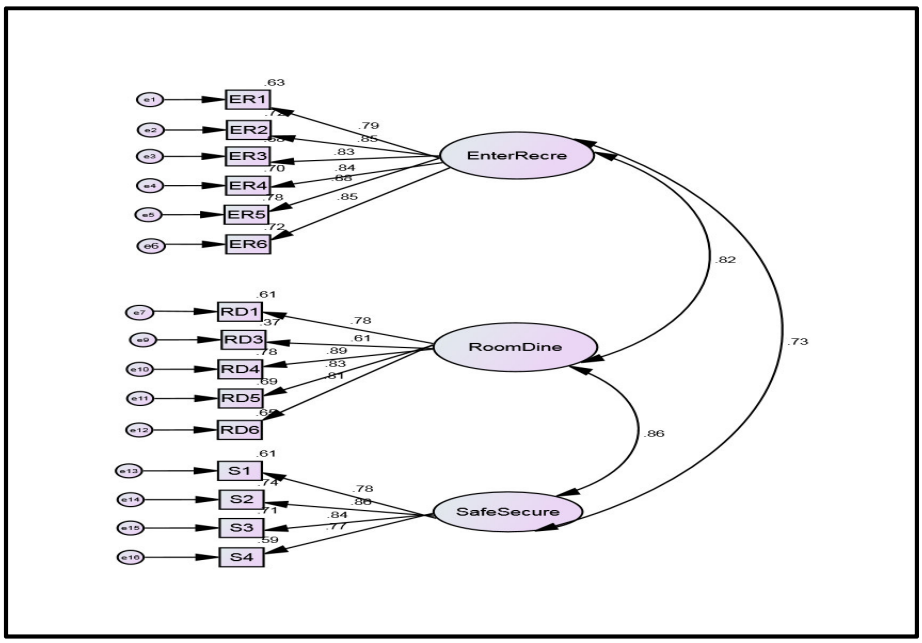

Figure 5.9. The First-Order CFA Modified Model for Physical Environment Quality

The first-order CFA modified model for physical environment quality also met the convergent and discriminant validity's criteria. Table 5.12 shows that all the standardized factor loadings in the modified model were significant and higher than 0.5. The AVE and construct reliability scores were higher than 0.5 and 0.7, respectively. The correlation values between sub-dimensions were less than 1.00 (0.816; 0.864; 0.730).

Table 5.12. The Construct Validity of the First-Order CFA Modified Model for Physical Environment Quality

Construct	Items	Factor loading	CR	AVE	Correlation
Entertainment, recreation, sport, fitness and health facilities	ER1	0.791 (13.333)***	0.933	0.703	EnterRecre< -- >RoomDine: 0.816 RoomDine< -- >SafeSecure: 0.864 EnterRecre< -- >SafeSecure: 0.730
	ER2	0.846 (14.752)***			
	ER3	0.828***			
	ER4	0.838 (14.243)***			
	ER5	0.883 (15.076)***			
	ER6	0.847 (14.118)***			
Room, dining and bar facilities	RD1	0.781 (14.063)***	0.886	0.622	
	RD3	0.611 (9.524)***			
	RD4	0.885***			
	RD5	0.832 (15.502)***			
	RD6	0.809 (14.785)***			
Safety and security	S1	0.781 (12.971)***	0.885	0.663	
	S2	0.861***			
	S3	0.845 (14.920)***			
	S4	0.767 (12.880)***			

( ) t value
*** Statistically significant at the 0.001 level (t > 3.291)
** Statistically significant at the 0.01 level (t > 2.576)
*Statistically significant at the 0.1 level (t > 1.645)

As the correlation of EnterRecre-RoomDine and RoomDine- SafeScure were higher than 0.80, the researcher conducted a multicollinearity test. Fortunately, the modified model was deemed free from multicollinearity because it had high construct reliability (>0.70), a high R^2 (>0.25) (See Table 5.13), and high sample sizes (with a ratio higher than 3:1). In total, there were six items for measuring entertainment, recreation, sport, fitness, and health facilities; five items for measuring room, dining, and bar facilities; and four items for measuring safety and security.

Table 5.13. Squared Multiple Correlation (R^2) of the First-Order CFA Modified Model for Physical Environment Quality

Items	R^2	Items	R^2	Items	R^2	Items	R^2
ER1	0.625	ER5	0.780	RD4	0.783	S2	0.742
ER2	0.716	ER6	0.717	RD5	0.692	S3	0.713
ER3	0.685	RD1	0.610	RD6	0.654	S4	0.589
ER4	0.703	RD3	0.373	S1	0.610		

5.4.2.1.3. The First-Order CFA Results for Outcome Quality

According to the EFA results, outcome quality had two sub-dimensions: high quality food (three items), and carefree on-board experience (three items). There were six observed variables in the first-order CFA model for outcome quality. The model had 21 data points (6[6+1]/2), 13 estimable parameters (4 regression weights + 8 variances + 1 covariances), and eight degrees of freedom (21-8). For this reason, the model was classified as over-identified model (See Figure 5.10). The model also met the GOF criteria and unidimensionality requirements (See Table 5.14).

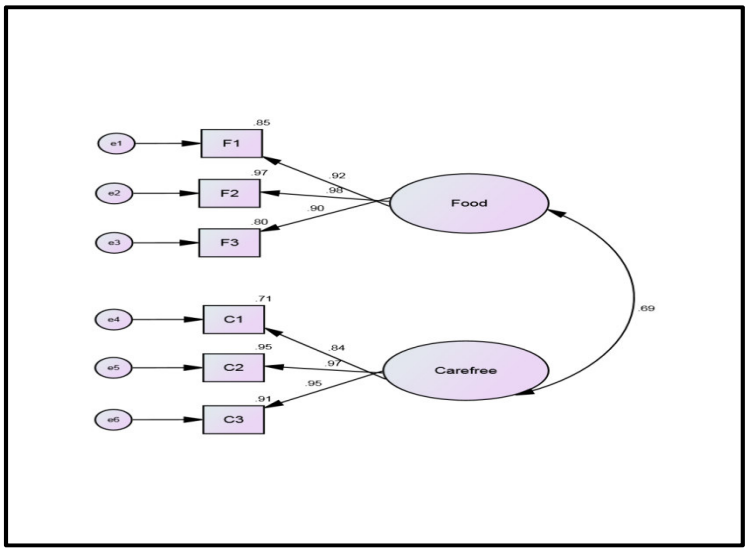

Figure 5.10. The First-Order CFA Model for Outcome Quality

Table 5.14. The GOF Results of the First-Order CFA Model for Outcome Quality

Model Fit Indices	Value	Acceptable Level
X^2	15.172	
df	8	
SRMR	0.0167	Less than 0.1 (Hair et al., 2010)
CFI	0.995	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.995	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.990	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	1.897	Less than 5.0 (Bollen, 1989)

In terms of construct validity, the model was able to satisfy convergent validity and discriminant validity criteria. Table 5.15 shows that all the standardized factor loadings in the model were significant and higher than 0.5. The AVE and construct reliability scores were higher than 0.5 and 0.7, respectively. The correlation value between sub-dimensions was less than 1.00 (0.687). As the correlation value between sub-dimensions was less than 0.80, it was not necessary to conduct a multicollinearity test. In conclusion, there were three items for measuring high quality food and three items for measuring carefree on-board experience.

Table 5.15. The Construct Validity of the First-Order CFA Model for Outcome Quality

Construct	Items	Factor Loading	CR	AVE	Correlation
High quality food	F1 F2 F3	0.924 (28.928)*** 0.985*** 0.896 (25.339)***	0.952	0.875	Food < -- > Carefree: 0.687
Carefree on-board experience	C1 C2 C3	0.844 (20.173)*** 0.974*** 0.953 (31.718)***	0.944	0.856	

( ) t value
*** Statistically significant at the 0.001 level (t > 3.291)
** Statistically significant at the 0.01 level (t > 2.576)
*Statistically significant at the 0.1 level (t > 1.645)

5.4.2.1.4. The First-Order CFA Results for Social Factors

According to the EFA results, social factors had three sub-dimensions: social density (four items), social interactions with crew (four items), and social interactions with other passengers (three items). There were 11 observed variables in the first-order CFA model for social factors. The model had 66 data points (11[11+1]/2), 25 estimable parameters (8 regression weights + 14 variances + 3 covariances), and 41 degrees of freedom (66-25). Consequently, the model was classified as over-identified model (See Figure 5.11).

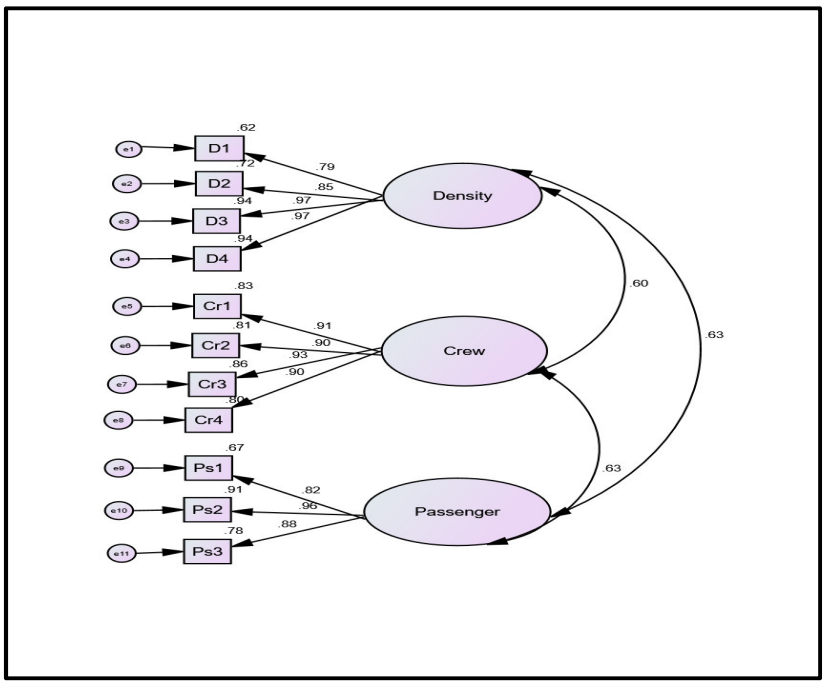

Figure 5.11. The First-Order CFA Model for Social Factors

The results revealed that the model satisfied the model fit criteria. The model fulfilled the criteria of one absolute index (SRMR) and two incremental indices (CFI and IFI) and met unidimensionality requirements (See Table 5.16).

Table 5.16. The GOF Result of the First-Order CFA Model for Social Factors

Model Fit Indices	Value	Acceptable Level
X^2	250.292	
df	41	
SRMR	0.0471	Less than 0.1 (Hair et al., 2010)
CFI	0.915	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.916	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.886	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	6.105	Less than 5.0 (Bollen, 1989)

In terms of construct validity, the first-order CFA model for social factors met the convergent validity and discriminant validity criteria. Table 5.17 shows that all the standardized factor loadings in this model were significant and higher than 0.5. The AVE and construct reliability scores were higher than 0.5 and 0.7, respectively. The correlation values between sub-dimensions were less than 1.00 (0.605; 0.627; 0.630) and there was zero probability of a multicollinearity problem. In conclusion, social density, social interactions with crew, and social interactions with other passengers were measured using four items, four items, and three items, respectively.

Table 5.17. The Construct Validity of the First-Order CFA Model for Social Factors

Construct	Items	Factor loading	CR	AVE	Correlation
Social density	D1	0.789 (16.691)***	0.944	0.802	Density < -- > Crew: 0.605
	D2	0.847 (20.145)***			Crew < -- > Passenger: 0.627
	D3	0.967***			Density < -- > Passenger: 0.630
	D4	0.968 (36.299)***			
Social interactions with crew	Cr1	0.911 (20.793)***	0.949	0.823	
	Cr2	0.899***			
	Cr3	0.926 (18.858)***			
	Cr4	0.895 (17.307)***			
Social interactions with other passengers	Ps1	0.821 (17.137)***	0.911	0.787	
	Ps2	0.956***			
	Ps3	0.880 (19.861)***			

( ) t value
*** Statistically significant at the 0.001 level (t > 3.291)
** Statistically significant at the 0.01 level (t > 2.576)
*Statistically significant at the 0.1 level (t > 1.645)

5.4.2.2. The Second-Order CFA Results for the Primary Dimensions

Cruise service quality is a multi-dimensional and hierarchical construct. The relationships between the four primary dimensions (the second-order latent variables) and the 10 sub-dimensions (the first-order latent variables) need to be analysed (Maruskin, Thrash & Elliot, 2012). This research employed the partial disaggregation method to conduct a second-order CFA for the four primary dimensions (See Figure 5.12) as recommended by Williams and O'Boyle (2008), Amiot et al. (2006), and Bagozzi and Heatherton (1994). The measurement items under the same sub-dimension were randomly grouped into two parcels. One parcel is equal to the total of selected measurement items (Bandalos & Finney, 2001).

The results revealed that the second-order CFA model for the primary dimensions met GOF criteria (See Table 5.18) and satisfied the construct validity of second-order factors (See Table 5.19). All standardized factor loadings in this model were significant and higher than 0.5. The correlation values among primary dimensions were less than 1.00 (0.838; 0.934; 0.969; 0.932; 0.782; 0.907). The model was also free from multicollinearity as it had a high R^2 (>0.25) (See Table 5.20). High correlations between primary dimensions indicate the existence of third-order factor (that is, cruise service quality) (Caro & García, 2007; Dabholkar et al., 1996).

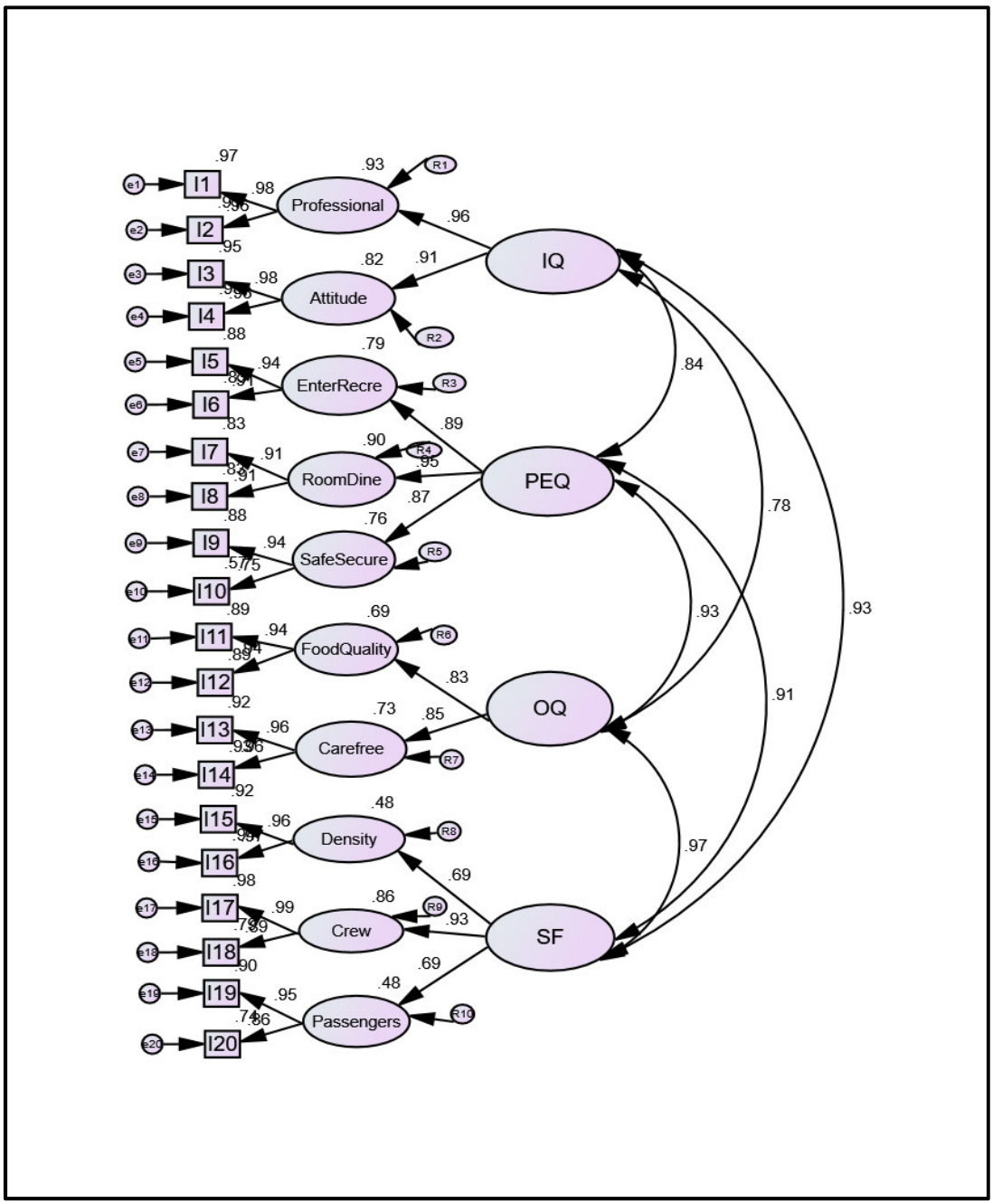

Figure 5.12. The Second-Order CFA Model for the Primary Dimensions

KEY:

I1: P1+P3+P4+P6+P8
I2: P2+P5+P7+P9+P10+P11
I3: At1+At5
I4: At2+At3+At4
I5: ER1+ER2+ER6
I6: ER3+ER4+ER5
I7: RD1+RD3+RD6
I8: RD4+RD5
I9: S1+S2+S3
I10: S4
I11: F1
I12: F2+F3
I13: C1+C3
I14: C2
I15: D4+D1
I16: D2+D3
I17: Cr1+Cr3+Cr4
I18: Cr2
I19: Ps1+Ps2
I20: Ps3

Table 5.18. The GOF Results of the Second-Order CFA Model for the Primary Dimensions

Model Fit Indices	Value	Acceptable Level
X^2	296.742	
df	154	
SRMR	0.0420	Less than 0.1 (Hair et al., 2010)
CFI	0.971	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.971	Greater than or equal to 0.90 (Bagozzi & Edwards, 1998)
TLI	0.964	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	1.927	Less than 5.0 (Bollen, 1989)

Table 5.19. Standardized Solutions of the Second-Order CFA Model for the Primary Dimensions

Variables	Factor Loading	Correlation
Professionalism → IQ	0.964 (20.238)***	IQ < -- > PEQ: 0.838
Attitude → IQ	0.905 (17.733)***	PEQ < -- > OQ: 0.934
EnterRecre→ PEQ	0.890 (13.760)***	OQ < -- > SF: 0.969
RoomDine→ PEQ	0.946 (14.491)***	IQ < -- > SF: 0.932
SafeSecure→ PEQ	0.872 (10.472)***	IQ < -- > OQ: 0.782
FoodQuality→ OQ	0.829 (12.560)***	PEQ < -- > SF: 0.907
Carefree → OQ	0.852 (12.517)***	
Density → SF	0.690 (8.549)***	
Crew → SF	0.925 (11.136)***	
Passengers → SF	0.690 (7.863)***	

( ) t value

*** Statistically significant at the 0.001 level (t > 3.291)

** Statistically significant at the 0.01 level (t > 2.576)

*Statistically significant at the 0.1 level (t > 1.645)

Table 5.20. Squared Multiple Correlation (R^2) of the Second-Order CFA Model for the Primary Dimensions

Variables	R^2	Variables	R^2
I1	0.968	I16	0.939
I2	0.913	I17	0.979
I3	0.955	I18	0.786
I4	0.930	I19	0.903
I5	0.879	I20	0.737
I6	0.828	Professionalism	0.929
I7	0.828	Attitude	0.819
I8	0.831	Entertainment, recreation, sport, fitness & health facilities	0.791
I9	0.878	Room, dining & bar facilities	0.896
I10	0.568	Safety & security	0.760
I11	0.891	Enjoying high quality food	0.687
I12	0.887	Carefree on-board experience	0.726
I13	0.922	Social density	0.476
I14	0.930	Social interactions with crew	0.856
I15	0.919	Social interactions with other passengers	0.477

In summary, interaction quality had two sub-dimensions: professionalism and attitude. Physical environment quality had three sub-dimensions: (a) entertainment, recreation, sport, fitness, and health facilities, (b) room, dining, and bar facilities, (c) safety and security. Outcome quality had two sub-dimensions (high quality food and carefree on-board experience), and social factors had three sub-dimensions (social density, social interactions with crew, and social interactions with other passengers).

Table 5.19 indicates that professionalism ($\beta = 0.964$, t-value = 20.238, $p < 0.001$) was the strongest indicator of interaction quality, followed by attitude ($\beta = 0.905$, t-value = 17.733, $p < 0.001$). Room, dining, and bar facilities ($\beta = 0.946$, t-value = 14.491, $p < 0.001$) was the strongest indicator of physical environment quality, closely followed by entertainment, recreation, sport, fitness, and health facilities ($\beta = 0.890$, t-value = 13.760, $p < 0.001$) and safety and security ($\beta = 0.872$, t-value = 10.472, $p < 0.001$). Moreover, carefree on-board experience ($\beta = 0.852$, t-value = 12.517, $p < 0.001$) was the strongest indicator of outcome quality, followed by high quality food ($\beta = 0.829$, t-value = 12.560, $p < 0.001$). Finally, the indicators of social factors, ranked in descending order were as follows: social interactions with crew ($\beta = 0.925$, t-value = 11.136, $p < 0.001$), social density ($\beta = 0.690$, t-value = 8.549, $p < 0.001$), and social interactions with other passengers ($\beta = 0.690$, t-value = 7.863, $p < 0.001$). These findings supported H1a, H2e, H3b, H3c, H4a, H4b, H4c and H9 (See Chapter 3).

5.4.2.3. The First-Order CFA Results for Cruise Service Quality

The purpose of first-order CFA for cruise service quality was to identify the relationships between the four primary dimensions and the 12 measurement items. There were 12 observed variables in the first-order CFA model for cruise service quality. The model had 78 data points (12[12+1]/2), 30 estimable parameters (8 regression weights + 6 variances + 16 covariances), and 48 degrees of freedom (78-30). Consequently, the model was classified as over-identified model (See Figure 5.13). The results also revealed that this model met the GOF criteria and the requirements of unidimensionality (See Table 5.21).

In terms of construct validity, the model met the convergent and discriminant validity criteria. Table 5.22 shows that all the standardized factor loadings in this model were significant and higher than 0.5. The AVE and construct reliability scores were higher than 0.5 and 0.7, respectively. In addition, the correlation values between primary dimensions were less than 1.00 (0.711; 0.733; 0.793; 0.767; 0.673; 0.779). As the correlation values between latent variables were less than 0.80, the model was free from multicollinearity problem.

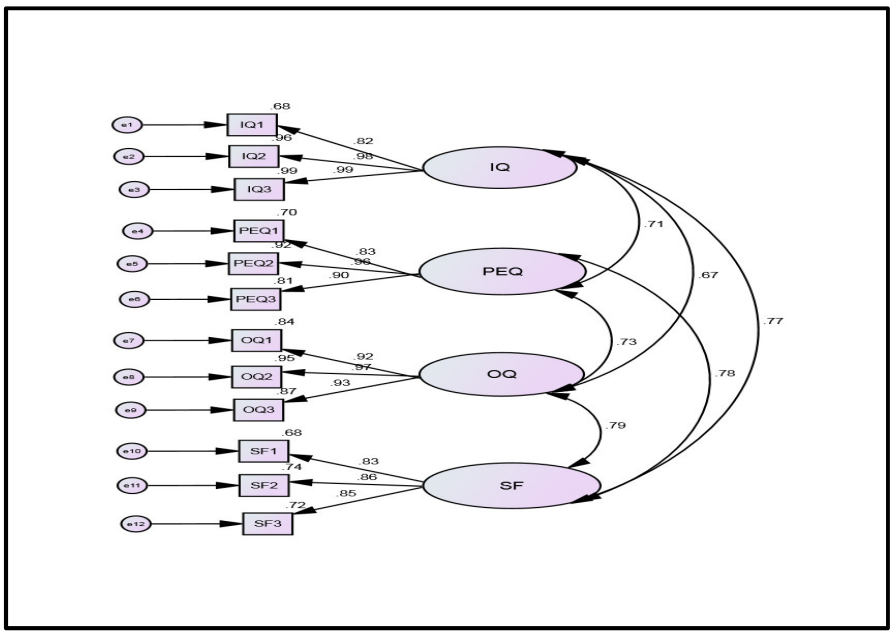

Figure 5.13. The First-Order CFA Model for Cruise Service Quality

Table 5.21. The GOF Results of the First-Order CFA Model for Cruise Service Quality

Model Fit Indices	Value	Acceptable Level
X^2	123.322	
df	48	
SRMR	0.0422	Less than 0.1 (Hair et al., 2010)
CFI	0.973	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.974	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.963	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	2.569	Less than 5.0 (Bollen, 1989)

Table 5.22. The Construct Validity of the First-Order CFA Model for Cruise Service Quality

Construct	Items	Factor Loading	CR	AVE	Correlation
IQ	IQ1	0.822(19.759)***	0.950	0.871	IQ < -- > PEQ : 0.711
	IQ2	0.977(51.859)***			PEQ < -- > OQ : 0.733
	IQ3	0.993***			OQ < -- > SF : 0.793
PEQ	PEQ1	0.835(18.383)***	0.920	0.808	IQ < -- > SF : 0.767
	PEQ2	0.960***			IQ < -- > OQ : 0.673
	PEQ3	0.898(22.666)***			PEQ < -- > SF : 0.779
OQ	OQ1	0.917(27.316)***	0.959	0.886	
	OQ2	0.973***			
	OQ3	0.935(29.384)***			
SF	SF1	0.827(14.573)***	0.872	0.714	
	SF2	0.862***			
	SF3	0.847(14.913)***			

( ) t value

*** Statistically significant at the 0.001 level (t > 3.291)

** Statistically significant at the 0.01 level (t > 2.576)

*Statistically significant at the 0.1 level (t > 1.645)

5.4.2.4. The Second-Order CFA Results for Cruise Service Quality

The aim of this analysis was to examine the relationships between first-order variables (the four primary dimensions) and a second-order variable (cruise service quality) (See Figure 5.14). Although the first-order CFA model for cruise service quality was over-identified, there is no guarantee that the second-order CFA model would be the same (Byrne, 2010). Thus, it is necessary to conduct model identification on the second-order CFA model.

The model had four primary dimensions. There were 10 data points (4[4+1]/2), 8 estimable parameters (4 regression weights + 4 residuals), and 2 degrees of freedom (10-8). Therefore, the model was classified as an over-identified model. The results also revealed that the model met GOF criteria (See Table 5.23) and satisfied the construct validity of the second-order factor (See Table 5.24). All the standardized factor loadings in this model were significant and higher than 0.5.

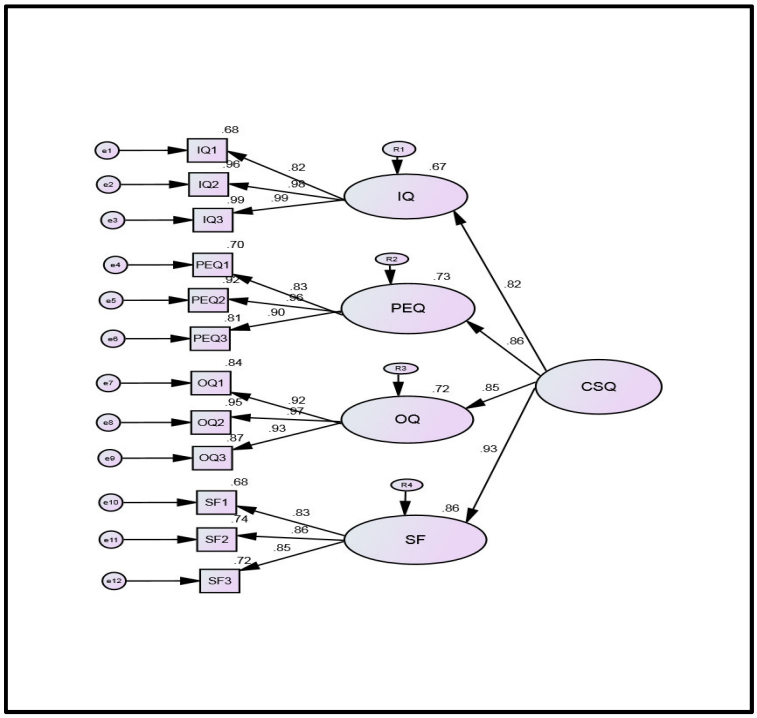

Figure 5.14. The Second-Order CFA Model for Cruise Service Quality

Table 5.23. The GOF Results of the Second-Order CFA Model for Cruise Service Quality

Model Fit Indices	Value	Acceptable Level
X^2	125.229	
df	50	
SRMR	0.0427	Less than 0.1 (Hair et al., 2010)
CFI	0.973	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.974	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.965	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	2.505	Less than 5.0 (Bollen, 1989)

Table 5.24. Standardized Solutions of the Second-Order CFA Model for Cruise Service Quality

Variables	Factor Loading
IQ → CSQ	0.819 (12.984)***
PEQ → CSQ	0.855 (13.431)***
OQ→ CSQ	0.847***
SF→ CSQ	0.928 (12.985)***

( ) t value
*** Statistically significant at the 0.001 level (t > 3.291)
** Statistically significant at the 0.01 level (t > 2.576)
*Statistically significant at the 0.1 level (t > 1.645)

Table 5.24 shows that social factors (β = 0.928, t-value = 12.985, p < 0.001) was the strongest indicator of cruise service quality, followed by physical environment quality (β = 0.855, t-value = 13.431, p < 0.001), outcome quality (β = 0.847, p < 0.001), and interaction quality (β = 0.819, t-value = 12.984, p < 0.001). These findings support research hypotheses: H5, H6, H7, H8, and H10.

5.4.2.5. The First-Order CFA Results for the Higher-Order Constructs

The purpose of the first-order CFA for the higher-order constructs was to examine the relationships between the five higher-order constructs (cruise service quality, cruise line image, passenger satisfaction, passenger loyalty, and passenger participation), and its measurement items. The total number of observed variables in this model was 20. The model had 210 data points (20[20+1]/2), 50 estimable parameters (15 regression weights + 25 variances + 10 covariances), and 160 degrees of freedom (210-50). Therefore, the model was classified as over-identified model (See Figure 5.15). The results also revealed that this model met the GOF criteria and unidimensionality requirements (See Table 5.25).

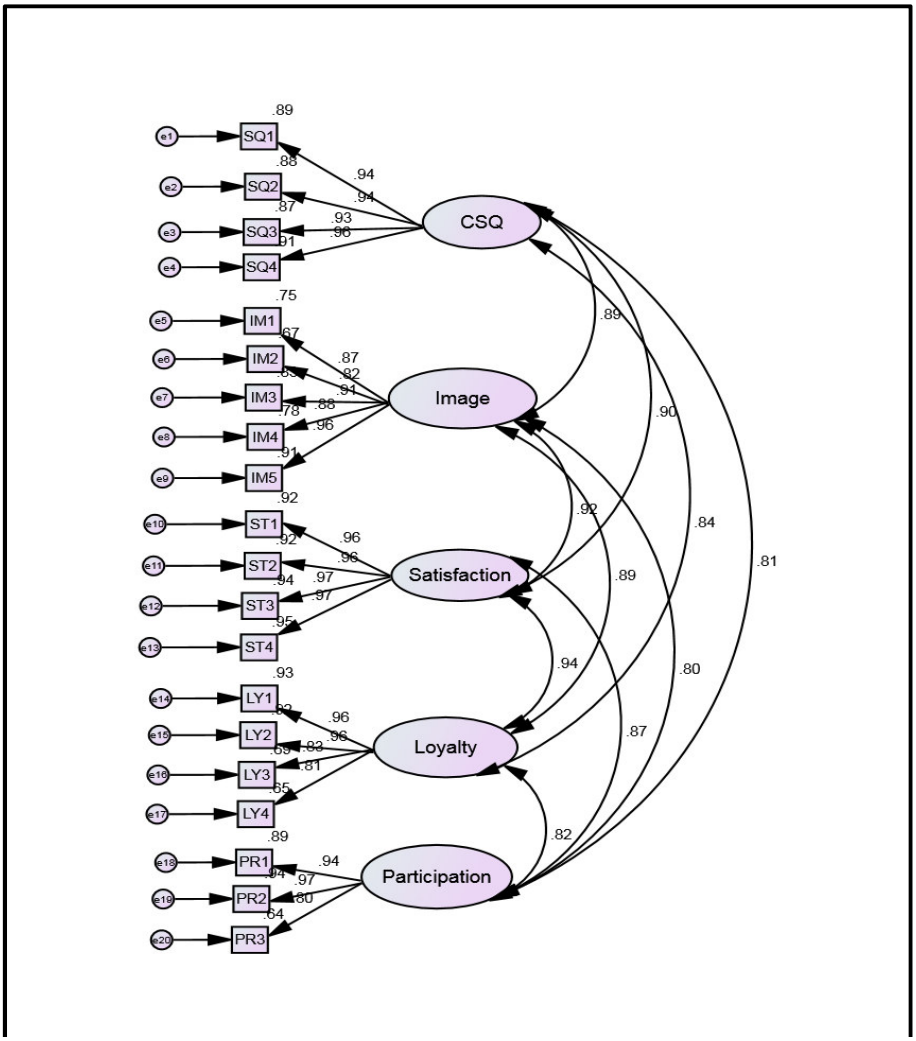

Figure 5.15. The First-Order CFA Model for the Higher-Order Constructs

Table 5.25. The GOF Results of the First-Order CFA Model for the Higher-Order Constructs

Model Fit Indices	Value	Acceptable Level
X^2	542.700	
df	160	
SRMR	0.0320	Less than 0.1 (Hair et al., 2010)
CFI	0.940	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.940	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.929	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	3.392	Less than 5.0 (Bollen, 1989)

In terms of construct validity, the model met the convergent and discriminant validity criteria. Table 5.26 shows that all the standardized factor loadings in this model were significant and higher than 0.5. The AVE and construct reliability scores were higher than 0.5 and 0.7, respectively. The correlation values between higher-order constructs were less than 1.00 (0.894; 0.917; 0.938; 0.819;

0.810; 0.840; 0.903; 0.801; 0.886; 0.871). In addition, the model was free from multicollinearity as it had a high R^2 (>0.25) (See Table 5.27).

Table 5.26. The Construct Validity of the First-Order CFA Model for the Higher-Order Constructs

Construct	Items	Factor Loading	CR	AVE	Correlation
Cruise service quality	SQ1	0.945 (26.249)***	0.967	0.888	CSQ < -- > Image: 0.894 Image < -- > Satisfaction: 0.917 Loyalty < -- > Satisfaction: 0.938 Loyalty < -- > Participation: 0.819 CSQ < -- > Participation: 0.810 CSQ < -- > Loyalty: 0.840 CSQ < -- > Satisfaction: 0.903 Image < -- > Participation: 0.801 Image < -- > Loyalty: 0.886 Satisfaction < -- > Participation: 0.871
	SQ2	0.938 (25.605)***			
	SQ3	0.932***			
	SQ4	0.956 (27.866)***			
Cruise line image	IM1	0.866 (17.594)***	0.951	0.790	
	IM2	0.820 (15.774)***			
	IM3	0.913 (19.951)***			
	IM4	0.885***			
	IM5	0.956 (22.325)***			
Passenger satisfaction	ST1	0.957 (36.132)***	0.981	0.931	
	ST2	0.960 (36.982)***			
	ST3	0.972 (41.266)***			
	ST4	0.973***			
Passenger loyalty	LY1	0.964 (18.901)***	0.933	0.797	
	LY2	0.960 (18.853)***			
	LY3	0.830***			
	LY4	0.808 (14.110)***			
Passenger participation	PR1	0.944 (16.581)***	0.930	0.825	
	PR2	0.971 (17.571)***			
	PR3	0.802***			

( ) t value
*** Statistically significant at the 0.001 level (t > 3.291)
** Statistically significant at the 0.01 level (t > 2.576)
*Statistically significant at the 0.1 level (t > 1.645)

Table 5.27. Squared Multiple Correlation (R^2) of the First-Order CFA Model for the Higher-Order Constructs

Items	R^2	Items	R^2	Items	R^2
SQ1	0.893	IM4	0.782	LY2	0.922
SQ2	0.880	IM5	0.914	LY3	0.689
SQ3	0.869	ST1	0.915	LY4	0.653
SQ4	0.914	ST2	0.922	PR1	0.891
IM1	0.749	ST3	0.944	PR2	0.942
IM2	0.672	ST4	0.947	PR3	0.643
IM3	0.833	LY1	0.930	LY2	0.922

In conclusion, cruise service quality and cruise line image were measured by four and five items, respectively. Meanwhile, passenger satisfaction, passenger loyalty, and passenger participation were measured by four, four, and three items, respectively.

5.4.3. The Structural Model Results

The structural model examined the relationships among cruise service quality, cruise line image, passenger satisfaction and passenger loyalty (See Figure 5.16). The total number of observed variables in this model was 17. The model had 153 data points (17[17+1]/2), 40 estimable parameters (19 regression weights + 21 variances), and 113 degrees of freedom (153-40). Thus, the model was classified as over-identified model. The results revealed that this model met the GOF criteria (See Table 5.28) and had significant factor loadings at the 0.001 level (See Table 5.29).

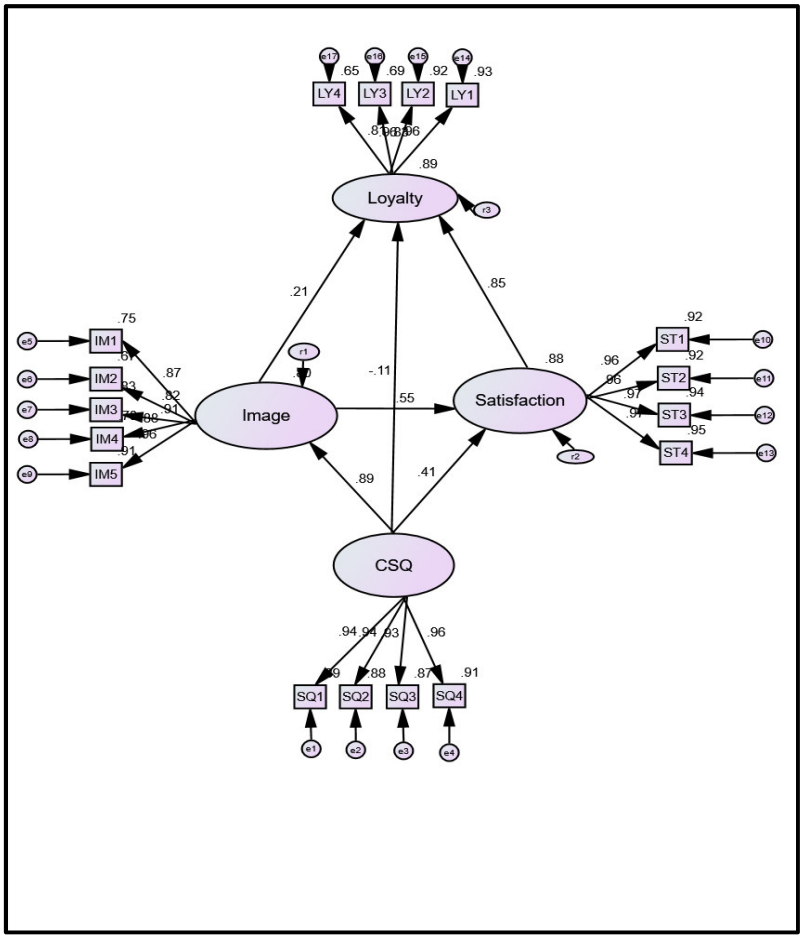

Figure 5.16. The Structural Model for the Four Higher-Order Constructs

Table 5.28. The GOF Results of the Structural Model for the Four Higher-Order Constructs

Model Fit Indices	Value	Acceptable Level
X^2	449.390	
df	113	
SRMR	0.0337	Less than 0.1 (Hair et al., 2010)
CFI	0.939	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.939	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.927	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	3.977	Less than 5.0 (Bollen, 1989)

Table 5.29. Standardized Solutions of the Structural Model for the Four Higher-Order Constructs

Variable Label	Factor Loading
SQ1	0.945 (29.298)***
SQ2	0.938 (28.039)***
SQ3	0.932 (27.868)***
SQ4	0.956***
IM1	0.866 (20.739)***
IM2	0.820 (17.689)***
IM3	0.913 (24.554)***
IM4	0.885 (22.329)***
IM5	0.956***
ST1	0.957***
ST2	0.960 (33.135)***
ST3	0.971 (35.592)***
ST4	0.974 (36.252)***
LY1	0.964 (17.583)***
LY2	0.960 (17.531)***
LY3	0.829 (14.076)***
LY4	0.807***

( ) t Value
*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

According to the structural model, cruise service quality and cruise line image are the antecedents of passenger satisfaction. Cruise line image and passenger satisfaction both have a positive and significant influence on passenger loyalty. However, cruise service quality did not have a positive or significant influence on passenger loyalty. These results support H11, H12, H14, H15, and H16 (See Table 5.30).

Table 5.30. Standardized Causal Effects of the Structural Model for the Four Higher-Order Constructs and Assessment of Hypotheses

Outcomes	Determinants	Standardized Coefficients Paths		Hypotheses	Assessments
		Direct Causal Paths	Critical Ratios		
Cruise line image	Cruise service quality	0.894	20.286***	H11	Supported
Passenger satisfaction	Cruise service quality	0.413	5.357***	H12	Supported
	Cruise line image	0.548	7.072***	H14	Supported
Passenger loyalty	Cruise service quality	-0.113	-1.368	H13	Not Supported
	Cruise line image	0.210	2.226*	H15	Supported
	Passenger satisfaction	0.847	8.189***	H16	Supported

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)

*Statistically significant at the 0.1 level (t > 1.645)

5.4.4. The Mediation Analysis Results

This section discusses the results of mediation analysis for cruise line image and passenger participation. As previously discussed, there are two types of mediating role: partial and full (Hair et al., 2010). Partial mediation occurs when there is a decrease in the relationship coefficient between the predictor variable and the criterion variable when the mediator variable is added but the relationship is still significant. Full mediation occurs when there is a decrease in the relationship coefficient between the predictor variable and the criterion variable when the mediator variable is added, and the relationship becomes insignificant.

5.4.4.1. The Result of Mediation Analysis for Cruise Line Image on the Cruise Service Quality – Passenger Satisfaction Relationship

The predictor, mediator and criterion variables in this mediation analysis were cruise service quality, cruise line image, and passenger satisfaction, respectively. The researcher analysed direct and indirect effect of cruise service quality on passenger satisfaction (See Figure 5.17 and Figure 5.18). Although the normed chi-square of the direct model did not meet the required standards, the direct model satisfied one absolute index (SRMR) and three incremental indices (CFI, IFI, and TLI) (See Table 5.31).Thus, the direct and indirect models met goodness of fit criteria (See Table 5.31 and Table 5.33).

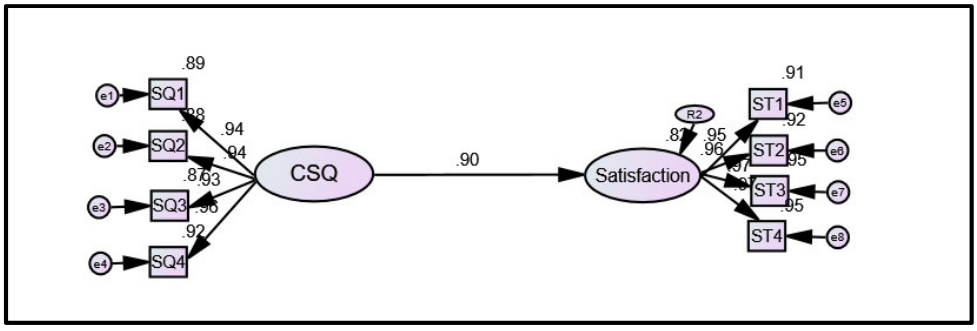

Figure 5.17. The Direct Effect of Cruise Service Quality on the Passenger Satisfaction Model

Table 5.31. The GOF Results for the Direct Effect of Cruise Service Quality on the Passenger Satisfaction Model

Model Fit Indices	Value	Acceptable Level
X^2	136.559	
df	19	
SRMR	0.0232	Less than 0.1 (Hair et al., 2010)
CFI	0.958	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.958	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.938	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	7.187	Less than 5.0 (Bollen, 1989)

Table 5.32. The Standardized Causal Effect of Cruise Service Quality on the Passenger Satisfaction

Outcome	Determinant	Causal Effects		Result
		Direct Causal Path	Critical Ratio	
Passenger satisfaction	Cruise line image	0.904	21.474***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

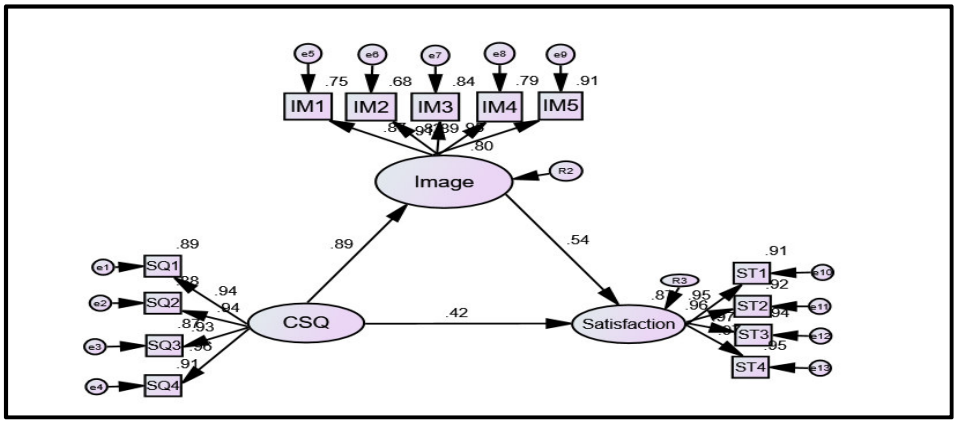

Figure 5.18. The Indirect Effect of Cruise Service Quality on the Passenger Satisfaction Model

Table 5.33. The GOF Results for the Indirect Effect of Cruise Service Quality on the Passenger Satisfaction Model

Model Fit Indices	Value	Acceptable Level
X^2	282.358	
df	62	
SRMR	0.0303	Less than 0.1 (Hair et al., 2010)
CFI	0.948	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.948	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.935	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	4.554	Less than 5.0 (Bollen, 1989)

Table 5.34. Standardized Causal Effects among Cruise Service Quality, Cruise Line Image and Passenger Satisfaction

Outcomes	Determinants	Causal Effects		Results
		Direct Causal Path	Critical Ratios	
Cruise line image	Cruise service quality	0.893	15.254***	Significant
Passenger satisfaction	Cruise service quality	0.423	5.508***	Significant
Passenger satisfaction	Cruise line image	0.538	6.458***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

The results revealed that cruise line image partially mediated the relationship between cruise service quality and passenger satisfaction. The relationship between cruise service quality and passenger satisfaction decreased (from 0.904 to 0.423) when cruise line image was added to the model, but the relationship remained statistically significant (See Table 5.32 and Table 5.34). This finding supports H17.

5.4.4.2. The Result of Mediation Analysis for Cruise Line Image on the Cruise Service Quality – Passenger Loyalty Relationship

In this mediation analysis, cruise service quality, cruise line image and passenger loyalty were predictor, mediator, and criterion variables, respectively. The researcher analysed direct and indirect effect of cruise service quality on passenger loyalty (See Figure 5.19 and Figure 5.20). The direct and indirect models met goodness of fit criteria (See Table 5.35 and Table 5.37). Although the normed chi-square of the direct model did not achieve the required level, the model satisfied one absolute index (SRMR) and three incremental indices (CFI, IFI, and TLI) (See Table 5.35).

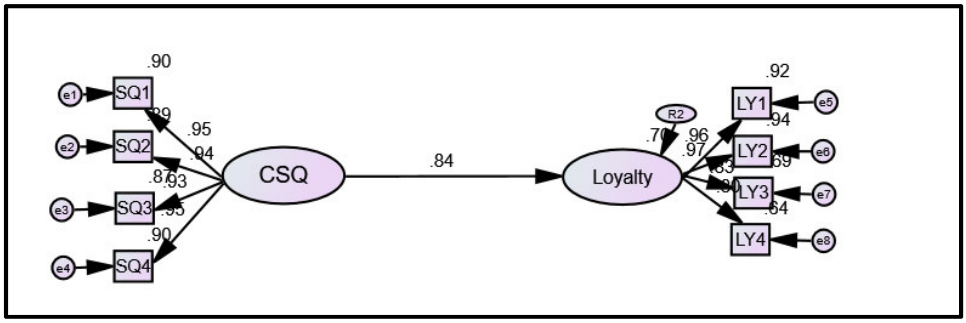

Figure 5.19. The Direct Effect of Cruise Service Quality on the Passenger Loyalty Model

Table 5.35. The GOF Results for the Direct Effect of Cruise Service Quality on the Passenger Loyalty Model

Model Fit Indices	Value	Acceptable Level
X^2	134.276	
df	19	
SRMR	0.0334	Less than 0.1 (Hair et al., 2010)
CFI	0.947	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.947	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.922	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	7.067	Less than 5.0 (Bollen, 1989)

Table 5.36. The Standardized Causal Effect of Cruise Service Quality on the Passenger Loyalty

Outcome	Determinant	Causal Effect		Result
		Direct Causal Path	Critical Ratio	
Passenger loyalty	Cruise service quality	0.835	17.278***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

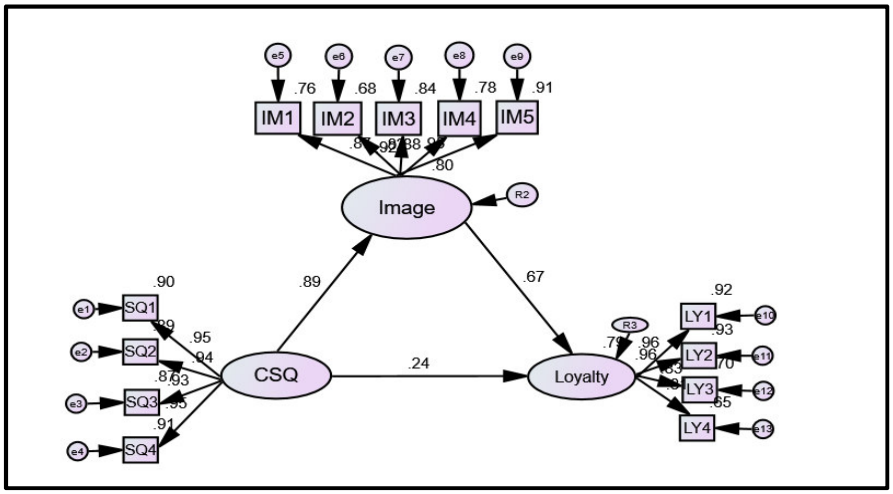

Figure 5.20. The Indirect Effect of Cruise Service Quality on the Passenger Loyalty Model

Table 5.37. The GOF Results for the Indirect Effect of Cruise Service Quality on the Passenger Loyalty Model

Model Fit Indices	Value	Acceptable Level
X^2	288.553	
df	62	
SRMR	0.0374	Less than 0.1 (Hair et al., 2010)
CFI	0.937	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.938	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.921	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	4.654	Less than 5.0 (Bollen, 1989)

Table 5.38. Standardized Causal Effects among Cruise Service Quality, Cruise Line Image and Passenger Loyalty

Outcomes	Determinants	Causal Effects		Results
		Direct Causal Path	Critical Ratios	
Cruise line image	Cruise service quality	0.892	15.100***	Significant
Passenger loyalty	Cruise service quality	0.238	2.439*	Significant
Passenger loyalty	Cruise line image	0.672	6.342***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

The results revealed that cruise line image also partially mediated the relationship between cruise service quality and passenger loyalty. The relationship between cruise service quality and passenger loyalty decreased (from 0.835 to 0.238) when cruise line image was added to the model, but the relationship remained statistically significant (See Table 5.36 and Table 5.38). This finding supports H18.

5.4.4.3. The Result of Mediation Analysis for Passenger Participation on the Outcome Quality – Cruise Service Quality Relationship

Passenger participation is proposed to have a mediating effect on the relationships between cruise service quality primary dimensions and cruise service quality. Although the measurement model of cruise service quality used reflective theory (arrows drawn from cruise service quality to primary dimensions), the researcher employed an established direction of causality between the primary dimensions and cruise service quality in this mediation analysis (that is, the arrows were drawn from primary dimensions to cruise service quality). Jarvis, MacKenzie and Podsakoff (2003) recommend researchers use an established direction of causality when they focus on the structural relationships between constructs. Meanwhile, researchers can employ formative or reflective factor models when they focus on the measurement relationships. Consequently, the predictor, mediator and criterion variables in this mediation analysis were outcome quality, passenger participation, and cruise service quality, respectively.

The researcher analysed direct and indirect effect of outcome quality on cruise service quality (See Figure 5.21 and Figure 5.22). Both models met goodness of fit criteria (see Table 5.39 and Table 5.41).

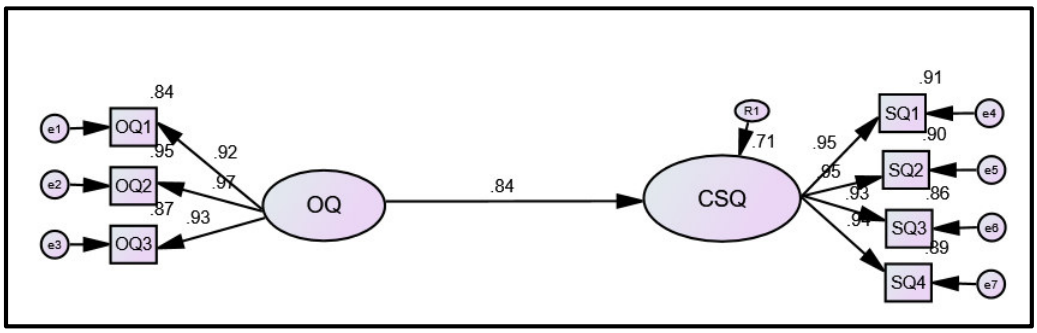

Figure 5.21. The Direct Effect of Outcome Quality on the Cruise Service Quality Model

Table 5.39. The GOF Results for the Direct Effect of Outcome Quality on the Cruise Service Quality Model

Model Fit Indices	Value	Acceptable Level
X^2	61.625	
df	13	
SRMR	0.0155	Less than 0.1 (Hair et al., 2010)
CFI	0.976	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.976	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.961	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	4.740	Less than 5.0 (Bollen, 1989)

Table 5.40. Standardized Causal Effect of Outcome Quality on the Cruise Service Quality

Outcome	Determinant	Causal Effect		Result
		Direct Causal Path	Critical Ratio	
Cruise service quality	Outcome quality	0.842	16.915***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

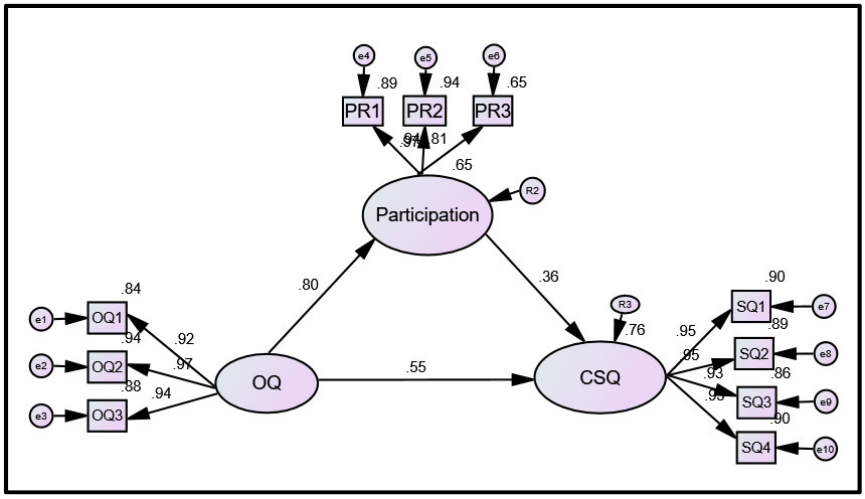

Figure 5.22. The Indirect Effect of Outcome Quality on the Cruise Service Quality Model

Table 5.41. The GOF Results for the Indirect Effect of Outcome Quality on the Cruise Service Quality Model

Model Fit Indices	Value	Acceptable Level
X^2	106.493	
df	32	
SRMR	0.0202	Less than 0.1 (Hair et al., 2010)
CFI	0.973	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.973	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.963	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	3.328	Less than 5.0 (Bollen, 1989)

Table 5.42. Standardized Causal Effects among Outcome Quality, Passenger Participation and Cruise Service Quality

Outcomes	Determinants	Causal Effects		Results
		Direct Causal Path	Critical Ratio	
Cruise service quality	Outcome quality	0.553	7.519***	Significant
Passenger participation	Outcome quality	0.805	15.808***	Significant
Cruise service quality	Passenger participation	0.361	4.893***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

The results revealed that passenger participation partially mediated the relationship between outcome quality and cruise service quality. The relationship between outcome quality and cruise service quality decreased (from 0.842 to 0.553), when passenger participation was added to the model, but the relationship remained statistically significant (See Table 5.40 and Table 5.42). This finding supports H19.

5.4.4.4. The Result of Mediation Analysis for Passenger Participation on the Social Factors – Cruise Service Quality Relationship

The predictor, mediator and criterion variables in this mediation analysis were social factors, passenger participation and cruise service quality, respectively. The researcher analysed direct and indirect effect of social factors on cruise service quality (See Figure 5.23 and Figure 5.24). Although the normed chi-square of the direct model did not meet the required standard, the direct model satisfied one absolute index (SRMR) and three incremental indices (CFI, IFI, and TLI) (See Table 5.43). Thus, the direct model met goodness of fit criteria in the same way that indirect model did (See Table 5.43 and Table 5.45).

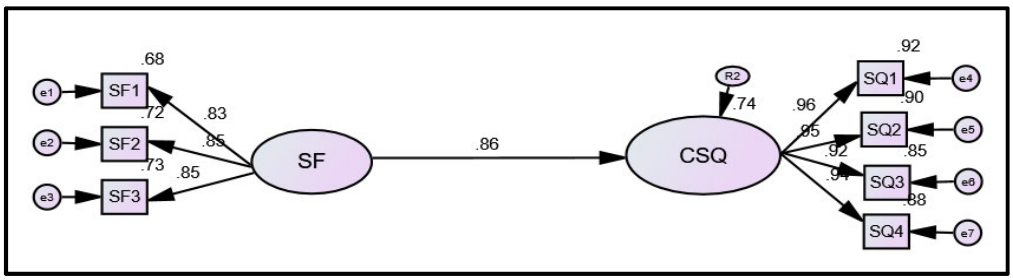

Figure 5.23. The Direct Effect of Social Factors on the Cruise Service Quality Model

Table 5.43. The GOF Results for the Direct Effect of Social Factors on the Cruise Service Quality Model

Model Fit Indices	Value	Acceptable Level
X^2	77.035	
df	13	
SRMR	0.0310	Less than 0.1 (Hair et al., 2010)
CFI	0.961	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.961	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.937	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	5.926	Less than 5.0 (Bollen, 1989)

Table 5.44. Standardized Causal Effect of Social Factors on the Cruise Service Quality

Outcome	Determinant	Causal Effect		Result
		Direct Causal Path	Critical Ratio	
Cruise service quality	Social factors	0.862	14.420***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

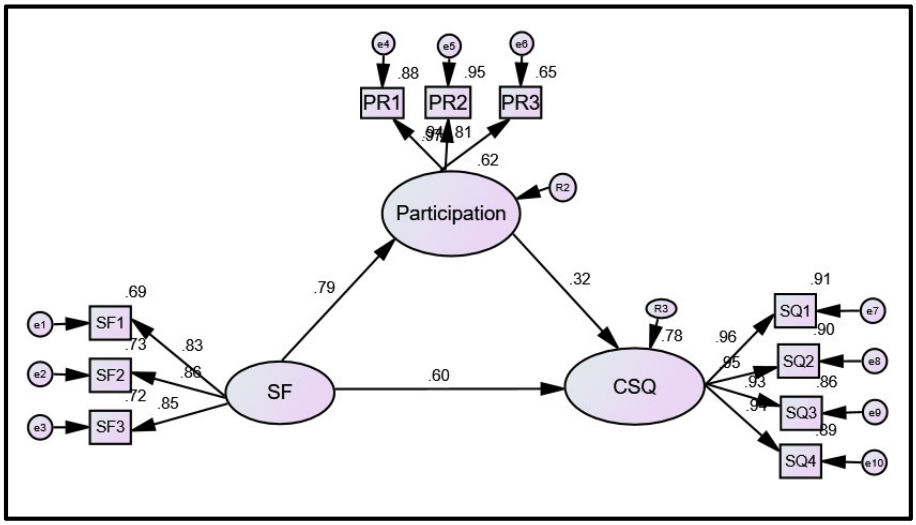

Figure 5.24. The Indirect Effect of Social Factors on the Cruise Service Quality Model

Table 5.45. The GOF Results for the Indirect Effect of Social Factors on the Cruise Service Quality Model

Model Fit Indices	Value	Acceptable Level
X^2	139.487	
df	32	
SRMR	0.0300	Less than 0.1 (Hair et al., 2010)
CFI	0.956	Greater than 0.90 (Hopwood & Donnellan, 2010)
IFI	0.956	Greater than or equal to 0.90 (Bagozzi& Edwards, 1998)
TLI	0.938	Greater than 0.90 (Hopwood & Donnellan, 2010)
Normed chi-square	4.359	Less than 5.0 (Bollen, 1989)

Table 5.46. Standardized Causal Effects among Social Factors, Passenger Participation and Cruise Service Quality

Outcomes	Determinants	Causal Effects		Results
		Direct Causal Path	Critical Ratio	
Cruise service quality	Social factors	0.604	7.078***	Significant
Passenger participation	Social factors	0.790	12.486***	Significant
Cruise service quality	Passenger participation	0.325	4.040***	Significant

*** Statistically significant at the 0.001 level (t >3.291)
** Statistically significant at the 0.01 level (t >2.576)
*Statistically significant at the 0.1 level (t > 1.645)

The results revealed that passenger participation partially mediated the relationship between social factors and cruise service quality. The relationship between social factors and cruise service quality decreased (from 0.862 to 0.604), when passenger participation was added to the model, but the relationship remained statistically significant (See Table 5.44 and Table 5.46). This finding supports H20.

5.4.5. The Independent Sample T-test Results

This research conducted independent sample t-test analysis for the purpose of testing the last three hypotheses (H21, H22 and H23) outlined in Chapter 3. There were 97 male and 103 female respondents in the second sub-sample. The results revealed that each research construct (sub-dimensions, primary dimensions, and higher-order constructs) satisfied the equality of variance requirements (See Table 5.47, Table 5.48, and Table 5.49). The Levene's test for equality of variances for each construct was insignificant ($p > 0.05$). Moreover, all the t-test values confirmed that male

and female cruise passengers' perceptions of the research constructs did not differ (p>0.05). Thus, H21, H22, and H23 were not supported.

Table 5.47. Independent Sample T-test Results for the Sub-dimensions

Construct	Levene's Test for Equality of Variances		T-test for Equality of Means (Significant at 5%)				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. error Difference
Professionalism	2.416	0.122	-.899	198	.370	-1.22418	1.36124
Attitude	0.051	0.821	-.021	198	.983	-.01127	.53207
EnterRecre	0.001	0.982	-1.428	198	.155	-1.20795	.84620
RoomDine	0.167	0.683	.241	198	.810	.12701	.52642
SafeSecure	1.697	0.194	.556	198	.579	.20727	.37286
Food	0.801	0.372	-.508	198	.612	-.22430	.44189
Carefree	0.209	0.648	-.725	198	.470	-.27529	.37990
Density	0.195	0.659	-.427	198	.670	-.29793	.69806
Crew	0.319	0.573	-.881	198	.379	-.41854	.47500
Passengers	0.284	0.595	.397	198	.692	.17742	.44658

Table 5.48. Independent Sample T-test Results for the Primary Dimensions

Construct	Levene's Test for Equality of Variances		T-test for Equality of Means (Significant at 5%)				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. error Difference
IQ	.162	.687	-.536	198	.593	-.20038	.37409
PEQ	.299	.585	-.210	198	.834	-.06776	.32229
OQ	.007	.933	-.245	198	.806	-.10279	.41907
SF	.002	.961	-.567	198	.571	-.21960	.38703

Table 5.49. Independent Sample T-test Results for the Higher-Order Constructs

Construct	Levene's Test for Equality of Variances		T-test for Equality of Means (Significant at 5%)				
	F	Sig.	T	df	Sig. (2-tailed)	Mean Difference	Std. error Difference
Cruise service quality	.326	.569	-1.105	198	.270	-.62426	.56481
Cruise line image	.004	.947	-.172	198	.864	-.12309	.71631
Passenger satisfaction	.145	.703	-.533	198	.595	-.34753	.65227
Passenger loyalty	.098	.754	.064	198	.949	.04994	.77652
Passenger participation	.341	.560	-.752	198	.453	-.36523	.48586

5.5. Summary

This chapter outlines the research findings and hypotheses testing in accordance with the research methodology. Exploratory factor analysis indicates two sub-dimensions of interaction quality, three sub-dimensions of physical environment quality, two sub-dimensions of outcome quality, and three sub-dimensions of social factors. Confirmatory factor analysis also confirmed the 10 sub-dimensions. The structural model presents the relationships between cruise service quality, cruise line image, passenger satisfaction and passenger loyalty and the mediating roles of cruise line image and passenger participation in the modelling framework. The summary of the hypotheses testing is presented in Table 5.50.

Table 5.50. Summary of Hypotheses Testing

Hypothesis	Results
H1: There is a significant positive relationship between the sub-dimensions of interaction quality (H1a, H1b, H1c, and H1d) and the interaction quality primary dimension.	**Supported**, interaction quality is comprised of two sub-dimensions (attitude and professionalism).
H2: There is a significant positive relationship between the sub-dimensions of physical environment quality (H2a, H2b, H2c, H2d, and H2e) and the physical environment quality primary dimension.	**Supported**, physical environment quality is comprised of three sub-dimensions (entertainment-recreation-sport-fitness-health facilities, room-dining-bar facilities, and safety-security).
H3: There is a significant positive relationship between the sub-dimensions of outcome quality (H3a, H3b, and H3c) and the outcome quality primary dimension.	**Supported**, outcome quality is comprised of two sub-dimensions (high quality food and carefree onboard experience).
H4: There is a significant positive relationship between the sub-dimensions of social factors (H4a, H4b, and H4c) and the social factors primary dimension.	**Supported**, social factors are comprised of three sub-dimensions (social interactions with crew, social interactions with other passengers, and social density).
H5: There is a significant positive relationship between the interaction quality primary dimension and passengers' overall perceptions of cruise service quality.	**Supported**, interaction quality has a significant influence on overall perceptions of cruise service quality.
H6: There is a significant positive relationship between the physical environment quality primary dimension and passengers' overall perceptions of cruise service quality.	**Supported**, physical environment quality has a significant influence on overall perceptions of cruise service quality.
H7: There is a significant positive relationship between the outcome quality primary dimension and passengers' overall perceptions of cruise service quality.	**Supported**, outcome quality has a significant influence on overall perceptions of cruise service quality.
H8: There is a significant positive relationship between the social factors primary dimension and passengers' overall perceptions of cruise service quality.	**Supported**, social factors have a significant influence on overall perceptions of cruise service quality.
H9: Cruise passengers vary in their perceptions of the importance of each of the sub-dimensions.	**Supported,** professionalism, room-dining-bar facilities, carefree onboard experience, and

	social interactions with crew are the most important sub-dimension of interaction quality, physical environment quality, outcome quality, and social factors, respectively.
H10: Cruise passengers vary in their perceptions of the importance of each of the primary dimension.	**Supported,** social factors are the most important primary dimension of cruise service quality followed by physical environment quality, outcome quality, and interaction quality.
H11: Higher perceptions of cruise service quality positively affect cruise line image.	**Supported,** cruise service quality has a significant influence on cruise line image.
H12: Higher perceptions of cruise service quality positively affect passenger satisfaction.	**Supported,** cruise service quality has a significant influence on passenger satisfaction.
H13: Higher perceptions of cruise service quality positively affect passenger loyalty.	**Not supported,** cruise service quality has no significant influence on passenger loyalty.
H14: Higher perceptions of cruise line image positively affect passenger satisfaction.	**Supported,** cruise line image has a significant influence on passenger satisfaction.
H15: Higher perceptions of cruise line image positively affect passenger loyalty.	**Supported,** cruise line image has a significant influence on passenger loyalty.
H16: Higher perceptions of passenger satisfaction positively affect passenger loyalty.	**Supported,** passenger satisfaction has a significant influence on passenger loyalty.
H17: Cruise line image mediates the relationship between cruise service quality and passenger satisfaction.	**Supported,** cruise line image partially mediates the relationship between cruise service quality and passenger satisfaction.
H18: Cruise line image mediates the relationship between cruise service quality and passenger loyalty.	**Supported,** cruise line image partially mediates the relationship between cruise service quality and passenger loyalty.
H19: Passenger participation mediates the relationship between outcome quality and cruise service quality.	**Supported,** passenger participation partially mediates the relationship between outcome quality and cruise service quality.
H20: Passenger participation mediates the relationship between social factors and cruise service quality.	**Supported,** passenger participation partially mediates the relationship between social factors and cruise service quality.
H21: Passengers' perceptions of the sub-dimensions of cruise service quality will differ based on gender.	**Not supported,** male and female cruise passengers have similar perceptions on the sub-dimensions of cruise service quality.
H22: Passengers' perceptions of the primary dimensions of cruise service quality will differ based on gender.	**Not supported,** male and female cruise passengers have similar perceptions on the primary dimensions of cruise service quality.
H23: Passengers' perceptions of cruise service quality, cruise line image, passenger satisfaction, passenger loyalty and passenger participation will differ based on gender.	**Not supported,** male and female cruise passengers have similar perceptions on the cruise service quality, cruise line image, passenger satisfaction, passenger loyalty and passenger participation.

Chapter 6

Discussion, Implications, Limitations and Recommendations for Future Research

6.1. Introduction

The research findings presented in Chapter 5 are reviewed in this chapter. The research implications, the research limitations and recommendations for future research are also discussed.

6.2. Discussion

This research succeeds in satisfying five of six research objectives. The following sections review each of the objectives, the findings of the current research, and how the results contribute to the body of research knowledge in the field.

6.2.1. The Dimensionality of Cruise Service Quality and the Least and Most Important Cruise Service Quality Dimensions

The first objective of this study was to determine the dimensionality of cruise service quality using Brady and Cronin's (2001) hierarchical service quality model as the framework. The second objective was to identify the least and most important cruise service quality dimensions. This research confirms that cruise service quality is a multidimensional construct with a hierarchical structure as suggested by Brady and Cronin (2001) and Dabholkar et al. (1996). The hierarchical structure of cruise service quality consists of 10 first-order dimensions, four second-order dimensions (interaction quality, physical environment quality, outcome quality and social factors), and one third-order dimension (cruise service quality). The 10 first-order dimensions comprise two measuring interaction quality (professionalism and attitude), three measuring physical environment quality [(a) entertainment, recreation, sport, fitness and health facilities, (b) room, dining and bar facilities, and (c) safety and security], two measuring outcome quality (high quality food and carefree on-board experience), and three measuring social factors (social density, social interactions with crew and social interactions with other passengers). These results support Hypotheses H1a, H2e, H3b, H3c, H4a, H4b, H4c, H5, H6, H7, H8, H9 and H10 and partially satisfy Research Objectives 1 and 2.

The structure of the primary dimensions in this study is consistent with the dyadic interviews and Yan's (2017) study. Yan (2017) identified four primary dimensions of service quality for China's higher

education sector: interaction quality, physical environment quality, outcome quality and social factors quality. The current study's findings reinforce the view that social factors are a separate construct from physical environment quality (Jang et al., 2015; Nguyen et al., 2012).

Social factors are the most important primary dimension of cruise service quality. This is not unexpected since cruise ships have such a high level of social interaction among passengers (Huang & Hsu, 2009). Other research on German cruise passengers also considers social factors as an important aspect of the cruise experience (Papathanassis, 2012). The second most important primary dimension of cruise service quality (in this study) is physical environment quality. Although research indicates that physical environment quality is the least important primary dimension of service quality for motel and hotel services (Clemes et al., 2009; Clemes et al., 2011b), this research shows a significant contribution of physical environment quality to cruise service quality. This finding concurs with Channoi et al.'s (2018) research on beach resort hotels. Channoi et al. (2018) found that physical environment quality is the second most important primary dimension of service quality. Krieger et al. (2005) explain that consumers often choose a cruise holiday for a cruise ship's excellent facilities.

The third and fourth important primary dimensions of cruise service quality are outcome quality and interaction quality, respectively. These findings are consistent with some previous studies. Clemes et al. (2011b) report that outcome quality is the second to the least important primary dimension of motel service quality. Further, restaurant patrons in Malaysia identify interaction quality as the least important primary dimension of service quality (Clemes et al., 2018). The sub-dimensions are discussed in the following sections.

6.2.1.1. Interaction Quality

In this study, there are two sub-dimensions of interaction quality: professionalism and attitude. As explained in Chapter 5, the professionalism sub-dimension represents the crew's behaviour, expertise and problem-solving abilities (Channoi et al., 2018; Wilkinson et al., 2009). Professionalism is the most important indicator of interaction quality, followed by attitude.

Although the result confirms the significant positive relationship between professionalism and interaction quality, it does not confirm what was discussed in the dyadic interviews. Participants in dyadic interviews indicated three separate sub-dimensions of interaction quality: behaviour, expertise and problem solving. However, behaviour, expertise and problem solving sub-dimensions were combined into a single sub-dimension, professionalism. The CFA confirmed the validity of the professionalism sub-dimension. One plausible reason for this finding is that cruise passengers found the behaviour, expertise and problem solving to be present in similar measures when evaluating cruise service staff. This is not unique to cruise ships, as the findings in service quality studies in the

hospitality industry have provided similar results. For example, research on motel and beach resort hotels have proposed the more general construct of professionalism as a sub-dimension of interaction quality (Channoi et al., 2018; Clemes et al., 2011b). Furthermore, motel guests treat professionalism as the most important sub-dimension of interaction quality (Clemes et al., 2011b). Finally, Guliyev, Avci, Öztüren and Safaeimanesh (2019) contend that having professional employees is a key success factor in the hospitality industry.

For the attitude sub-dimension, the result is consistent with the dyadic interviews and much of the published research (Brady & Cronin, 2001; Channoi et al., 2018; Pollack, 2009). Pollack (2009) suggests that attitude is a sub-dimension of interaction quality in barber and local phone services and attitude has been found to be a sub-dimension of interaction quality in beach resort hotels, although it was not very influential (Channoi et al., 2018).

6.2.1.2. Physical Environment Quality

Physical environment quality has three sub-dimensions: (a) entertainment, recreation, sport, fitness and health facilities; (b) room, dining and bar facilities; and (c) safety and security. All sub-dimensions have significant positive relationships with the physical environment quality. Room-dining-bar facilities are the most important indicator of physical environment quality, closely followed by entertainment-recreation-sport-fitness-health facilities, and safety-security.

The room-dining-bar facilities sub-dimension is a combination of two proposed sub-dimensions [(a) room facilities and (b) dining and bar facilities]. These two proposed sub-dimensions were collapsed into a single sub-dimension in the EFA. The CFA verified the validity of the room-dining-bar facilities sub-dimension. This result was a departure from the dyadic interviews. Participants in the interviews indicated that room facilities and dining-bar facilities are separate sub-dimensions. Notwithstanding, the result corroborates the finding of previous studies. Xie et al. (2012) describe cabins and restaurants belong to the core attributes of the cruise ship. Kamenidou, Mamalis, Priporas and Kokkinis (2014) concluded that room, dining and bar facilities are under the same construct called accommodation facilities in the thermal spring bath industry, where accommodation facilities are a major supply element. Cruise passengers consider room and dining-bar facilities as one dimension. However, the significant positive relationship between room-dining-bar facilities and the physical environment quality has not been found in previous empirical studies. In fact, this finding seems to be unique in the marketing literature, at least among previous published studies examining cruise service quality.

The entertainment-recreation-sport-fitness-health facilities sub-dimension is a combination of two proposed sub-dimensions (i.e., entertainment facilities and recreation-sport-fitness-health facilities).

Both proposed sub-dimensions were collapsed into a single sub-dimension as a result of the EFA. The CFA then verified the validity of entertainment-recreation-sport-fitness-health facilities sub-dimension. This finding deviated from the dyadic interviews. The interview participants indicated that the entertainment facilities and recreation-sport-fitness-health facilities were separate sub-dimensions. However, there are similarities between these findings and those in a service quality study on the spa hotel industry. Blešić et al. (2014) concluded that the entertainment, recreation and wellness facilities make one construct. They also explained that the entertainment-recreation-wellness facilities are a dimension of spa hotel service quality. As sport, fitness and health facilities on a cruise ship could be characterised as wellness-related services (CLIA, 2017a; Dowling & Vasudavan, 2000; Ward, 1999), it is reasonable that the cruise passengers consider the entertainment facilities and recreation-sport-fitness-health facilities as one dimension.

Finally, the study's finding about safety and security as a sub-dimension of the physical environment quality was consistent with the dyadic interviews and Wu and Cheng's (2013) airline study. Clemes et al. (2008) also report that safety and security have a significant positive influence on airline service quality.

6.2.1.3. Outcome Quality

Outcome quality in this study has two sub-dimensions: high quality food and carefree on-board experience. Both sub-dimensions have a significant positive relationship with outcome quality. Carefree on-board experience is the most important indicator of outcome quality, followed by high quality food.

The finding that carefree on-board experience is a sub-dimension of outcome quality conforms with the results of the dyadic interviews. However, the finding cannot be compared with extant studies since there are none that use it to examine cruise service quality using a hierarchical service quality model. While novel, this result is consistent with other cruise research and there are compelling reasons why cruise passengers consider carefree on-board experience as the most important indicator of outcome quality. For example, Papathanassis (2012) finds that cruise passengers want to experience a stress-free holiday on a cruise ship. The indicators of a carefree on-board experience (i.e., escape from the pressures of daily life, a leisurely and stress-free holiday and relaxation) are defined as the goals of travelling in other tourism studies (Kwortnik & Ross, 2007; Pearce & Lee, 2005).

The result confirming high quality food as a sub-dimension of outcome quality concurs with finding from the dyadic interviews and previous studies. Clemes et al. (2018) and Wu and Mohi (2015) have confirmed food quality as a sub-dimension of outcome quality in moderate upscale restaurants and

fast-food restaurants, respectively. Wilkins et al. (2007) confirm that food quality is an aspect of hotel service quality.

6.2.1.4. Social Factors

Social factors comprise three sub-dimensions: social interactions with crew; social interactions with other passengers; and social density. All sub-dimensions have significant positive relationships with social factors. Social interactions with crew are the most important indicator of social factors, followed by social density and social interactions with other passengers.

The result for social interactions with crew as a sub-dimension of social factors agrees with the dyadic interviews and the findings in previous studies. For example, Jang et al. (2015) identified rapport as a dimension of social factors in the restaurant industry. Baker, Levy and Grewal (1992) conclude that the social relationships between customers and employees have a positive impact on customer evaluations of overall firm quality.

The result for social density as a sub-dimension of social factors is also consistent with the dyadic interviews and some empirical studies. For example, Jang et al. (2015) have provided evidence that social density is a dimension of social factors. Nguyen et al. (2012) also argued that social density is an aspect of social factors in hedonic services. Pons et al. (2016), in their study on leisure services, report that social density has a positive influence on consumers' experience.

Finally, the finding that there is a significant positive relationship between social interactions with other passengers and social factors is consistent with the dyadic interviews and previous research. For example, Jang et al. (2015) have identified social interactions with other customers as a dimension of social factors. Broader research in the cruise context reports significant effects of passenger-to-passenger interaction on cruise holiday experience (Huang & Hsu, 2010; Papathanassis, 2012).

6.2.2. The Interrelationships among Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty

The third objective of this study was to analyse the interrelationships among cruise service quality, cruise line image, passenger satisfaction and passenger loyalty. This research confirms the interrelationships among the four higher-order constructs. Consequently, the results support Hypotheses H11, H12, H14, H15, and H16, and satisfy Research Objective 3. However, H13 is not supported.

For hypotheses H11 and H12, higher perceptions of cruise service quality positively affect cruise line image and passenger satisfaction. H13 was not supported as there was no significant effect of cruise service quality on passenger loyalty. There are similarities between these findings and those in previous marketing studies. The current research reinforces the view that service quality is an antecedent of brand image and customer satisfaction (Başarangil, 2018; Clemes et al., 2018; Hapsari et al., 2017; Suhartanto et al., 2020). Clemes et al. (2018), Hapsari et al. (2017), Liat et al. (2014) and Yang et al. (2012) have demonstrated that service quality has a significant positive influence on brand image. In addition, research on the cruise industry has confirmed the significant positive influence of cruise service quality on passenger satisfaction (Forgas-Coll et al., 2014; Han et al., 2019; Radic & Lück, 2018). The non-significant result pertaining to hypothesis H13 is consistent with Channoi et al.'s (2018) and Hapsari et al.'s (2017) studies on beach resort hotels and the airlines industry, respectively.

The results for hypotheses H14 and H15 are that higher perceptions of cruise line image positively affect passenger satisfaction and passenger loyalty. These results corroborate the findings in other studies. Research on the hospitality industry has identified a significant positive influence of brand image on customer satisfaction (Clemes et al., 2009; Clemes et al., 2018; Han et al., 2019). Martenson (2007) and Jin et al. (2012) have defined brand image as the antecedent of customer loyalty.

Finally, the result pertaining to hypothesis H16 is that higher perceptions of passenger satisfaction positively affect passenger loyalty. This finding concurs with Lobo's (2008), Hosany and Witham's (2010), and Wu et al.'s (2021) findings on the cruise industry.

6.2.3. The Mediating Effect of Cruise Line Image in the Modelling Framework

The fourth objective of this study was to analyse the mediating effect of cruise line image on cruise service quality – passenger satisfaction relationship and cruise service quality – passenger loyalty relationship. This research reports that the cruise line image plays a partial mediating role in the cruise service quality – passenger satisfaction relationship and the cruise service quality – passenger loyalty relationship. These results support hypotheses H17 and H18 and satisfy Research Objective 4.

The result for hypothesis H17 indicates that cruise line image mediates the relationship between cruise service quality and passenger satisfaction. This is consistent with Chien and Chi's (2019) findings on the exhibition industry. Chien and Chi (2019) note that brand image mediates the relationship between service quality and customer satisfaction. The result for hypothesis H18 indicates that cruise line image mediates the relationship between cruise service quality and passenger loyalty. This confirms the findings in Akroush et al.'s (2016) tourism study. Akroush et al.

(2016) found that brand image mediates the relationship between service quality and customer loyalty.

6.2.4. The Mediating Effect of Passenger Participation in the Modelling Framework

The fifth objective of this study was to analyse the mediating effect of passenger participation on outcome quality – cruise service quality relationship and social factors – cruise service quality relationship. This research shows that there is a partial mediating effect of passenger participation on outcome quality – cruise service quality and the social factors – cruise service quality relationships. These results support hypotheses H19 and H20 and satisfy Research Objective 5.

The result for hypothesis H19 shows that passenger participation mediates the relationship between outcome quality and cruise service quality. The result for hypothesis H20 shows that passenger participation mediates the relationship between social factors and cruise service quality. These results cannot be compared with previous research since this is the first research that examines the mediating effect of passenger participation on outcome quality – cruise service quality and the social factors – cruise service quality relationships. However, marketing scholars have noted that outcome quality and social factors have a significant influence on customer involvement (Alexandris et al., 2012; Fatima & Razzaque, 2013) and customer involvement has a significant influence on perceived service quality (Chua et al., 2017). The mediating effect occurs simultaneously when the independent variable has a significant influence on the mediator variable and the mediator variable has significant influence on the dependent variable (Holmbeck, 1997; Kraemer, Wilson, Fairburn & Agras, 2002).

6.2.5. The Effect of Gender on the Research Constructs Evaluation

The last objective of this study was to evaluate male and female passengers' perceptions of the research constructs. This research was unable to confirm that male passengers' perceptions of the research constructs are different from female passengers. Consequently, hypotheses H21, H22, and H23 are not supported and Research Objective 6 is not satisfied. However, there are similarities between these findings and those of previous studies. Clemes et al. (2020) did not find a hypothesised gender effect on service quality's, customer satisfaction's and behavioural intention's evaluations in the spa industry. Lau and Phau (2010) have indicated that male and female customers have similar perceptions on brand image for prestige brands. For customer involvement, previous research has found gender differences that are not supported by the current study's finding. For example, Lee et al. (2012), in their study of the hotel industry, identified the perceptual differences between male and female customers regarding customer involvement.

6.3. Research Implications

The following sub-sections report the empirical and managerial implications of this study.

6.3.1. Empirical Implications

Four empirical implications arise from this study. Firstly, the use of comprehensive hierarchical modelling to determine the primary and sub dimensions of cruise service quality and the interrelationships among the four higher-order constructs in this study provides a framework for future research to examine these interrelationships for other categories of cruise ships (i.e., smaller ships and specialty cruises). Secondly, the measurement of cruise service quality using the framework of Brady and Cronin's (2001) hierarchical service quality model offers a meticulous and robust approach for measuring cruise service quality and overcomes the limitations of previous cruise studies.

Thirdly, the mediation analyses in this study enrich the understanding of the role of cruise line image and passenger participation in the modelling framework, which has not been examined in previous studies. Cruise line image partially mediates the cruise service quality – passenger satisfaction and cruise service quality – passenger loyalty relationships. Passenger participation partially mediates the outcome quality – cruise service quality and social factors – cruise service quality relationships. Lastly, the independent sample t-test analysis in this study provides factual information about the gender effect on cruise service evaluation. There are no perceptual differences between male and female cruise passengers in terms of the research constructs.

6.3.2. Managerial Implications

The current study's findings have important managerial implications for the cruise industry. First, this research provides a guideline for cruise managers about how to enhance passenger loyalty. Cruise ship management can maintain the loyal passengers by improving cruise service quality, generating a positive cruise line image and increasing passenger satisfaction. This research reveals that cruise service quality, cruise line image and passenger satisfaction are the key drivers of passenger loyalty, either directly or indirectly.

Secondly, this research shows that cruise service quality is a multidimensional construct with a hierarchical structure. Cruise service quality has four primary dimensions (i.e., interaction quality, physical environment quality, outcome quality, and social factors) and 10 sub-dimensions. In using this information, cruise ship management can understand how cruise passengers assess the quality

of on-board service. Cruise managers then will be able to develop a comprehensive marketing strategy to improve cruise service quality.

Acting on the importance of professionalism to passengers' perception of interaction quality, cruise ship management should take steps to ensure the professionalism of the crew. Managers should recruit crew who have a hospitality background and a suitable degree qualification. Cruise ship management should also educate and train the crew before deployment on a cruise ship. For the attitude sub-dimension, cruise ship management should employ people who have a positive attitude towards passengers. A positive attitude includes being welcoming, friendly, polite, courteous, patient, willing helpers.

Given the importance of the entertainment-recreation-sport-fitness-health facilities to passengers' perception of the physical environment quality, cruise managers should maintain their entertainment, recreation, sport, fitness, and health facilities and provide enjoyable parties and performances. In addition, the cabins, restaurants and bars on the cruise ship should be clean and have all modern comforts since room-dining-bar facilities is the most important sub-dimension of physical environment quality. For the importance of the safety and security sub-dimension, fire alarms, lifejackets, trained security personnel and a secure safe should be available on the ship.

High quality food is an important influence on passengers' perception of outcome quality. Thus, cruise ship management should serve a variety of food and beverages made with top quality ingredients for their passengers. In addition, cruise ship management should ensure that passengers feel leisurely, stress-free and relaxed on the ship because carefree on-board experience is the most important sub-dimension of outcome quality.

Given the importance of social interactions with crew to passengers' perception of social factors, cruise management should recruit employees with personal warmth. The degree of personal warmth shown by crew towards passengers can create passengers' feelings of comfort. In addition, considering the importance of the social interactions with other passengers sub-dimension, cruise ship management should facilitate passenger-to-passenger interaction. Finally, acting on the importance of the social density sub-dimension, cruise ship management should provide spacious on-board public spaces for the passengers.

This research shows that cruise line image mediates the relationships of cruise service quality – passenger satisfaction and cruise service quality – passenger loyalty. Therefore, cruise managers should put generating a positive cruise line image as one of the company's top strategic priorities. For example, after the pandemic is over, cruise ship management can collaborate with the mass media to inform customers that travelling on cruise ships is entirely safe. Finally, this research shows

that passenger participation mediates the relationships of outcome quality –cruise service quality and social factors – cruise service quality. Therefore, cruise ship management should keep providing various, enjoyable on-board activities for the passengers.

6.4. Research Limitations and Recommendations for Future Research

There are limitations in this study that could be addressed in future research on the cruise industry. The first limitation is the use of a passenger sample of medium, large and mega cruise ships for the focus groups and empirical analyses. Thus, the results may not apply equally to the other types of cruise ships (i.e., very small and small ships). Future research should formulate and examine the hypothesized relationships using passenger samples from very small and small cruise ships.

Further, the findings in this study cannot be generalised to other service industries. The findings are based only on the perceptions of cruise passengers. Scholars may apply the conceptual research model in this study to other service industries. However, researchers should analyse the interrelationships between the higher order constructs and those in the third-order conceptualisation of service to the service industry they are investigating (Clemes et al., 2014).

Chapter 7

Epilogue

7.1. Introduction

This chapter is written in response to the global pandemic effect on the cruise industry. The crisis may bring change in cruise passengers' attitude. It is probable that future cruise passengers will be increasingly concerned about the health-related risks of travelling on cruise ships. Many cruise passengers harboured fears of getting sick on a cruise ships before the epidemic (Fisher, Almanza, Behnke, Nelson & Neal, 2018) and it is likely that COVID-19 will change their attitudes and behaviours. Consequently, the findings of future cruise studies, even if they use this current study's conceptual research model and methodology, may differ from the findings in this current study.

Nevertheless, the current study's findings are still important for cruise ship management in developing a post-crisis recovery strategy. The following section discusses the results from this study and suggests how they are likely to change in a post-COVID-19 environment.

7.2. The Possibility of Changes to the Model in a Post-COVID-19 Environment

This section comprises five sub-sections that discuss how the current study's findings and interpretations are likely to change in a post-COVID-19 environment. The discussion follows the structure of Chapter 6, with the dimensionality of cruise service quality first, followed by interrelationships, mediators and gender.

7.2.1. The Dimensionality of Cruise Service Quality and the Least and Most Important Cruise Service Quality Dimensions

This research confirms four primary dimensions and 10 sub-dimensions for cruise service quality. Social factors are the most important primary dimension, followed by physical environment quality, outcome quality and interaction quality. The research found that cruise passengers evaluate their overall perception of interaction quality, physical environment quality, outcome quality, and social factors by assessing two, three, two and three sub-dimensions, respectively. The importance of the various sub-dimensions are as follows: professionalism is the most important indicator of interaction quality, followed by attitude. Room-dining-bar facilities are the most important indicator of physical environment quality, followed by entertainment-recreation-sport-fitness-health facilities, and safety-

security. Carefree on-board experience is the most important indicator of outcome quality, followed by high quality food. Social interactions with crew are the most important indicator of social factors, followed by social density and social interactions with other passengers.

The structure of the primary dimensions is likely to change in a post-COVID-19 environment. Social factors may become less important, or the least important primary dimension of cruise service quality. Future cruise passengers maintaining social distancing on cruise ships will likely result in a decline in passenger-to-passenger interaction. In fact, high social factors will be seen as a liability and low social factors beneficial in the future. Alternatively, physical environment quality may become the most important primary dimension of cruise service quality as cruise ship facilities hygiene, and safety and security may become key considerations for future cruise passengers.

COVID -19 may not change the structure of interaction quality's sub-dimensions. Future cruise passengers are likely to continue to consider professionalism as the most important indicator of interaction quality. During times when cruise passengers' perceptions of health risks increase, cruise ship management must provide correct and helpful information for cruise passengers so they understand how to increase their safety on cruise ship (Liu-Lastres, Schroeder & Pennington-Gray, 2019). A professional, coordinated crew is necessary to manage this process effectively.

The structure of physical environment quality's sub-dimensions is likely to change in a post-COVID-19 environment. Entertainment-recreation-sport-fitness-health facilities may become the least important indicator of physical environment quality. Fisher et al. (2018) found that cruise passengers tend to avoid visiting fitness centres and spas during a simulated virus outbreak. Room-dining-bar facilities may remain the most important indicator of physical environment quality as future cruise passengers are likely to be concerned with the core facilities hygiene. Cruise passengers considered cabin and restaurants, which are part of the core attributes, as the most important attributes on the cruise ship (Xie et al., 2012).

The structure of outcome quality's sub-dimensions is also likely to change. As many of the previous virus outbreaks on cruise ship were caused by contaminated food (Morillo, Luchs, Cilli & Timenetsky, 2012), future cruise passengers may consider high quality food as a more important indicator of outcome quality.

Finally, the structure of social factors' sub-dimensions in the post-COVID-19 environment will probably differ from the current study. Social density may become the most important indicator of social factors since future cruise passengers may desire a spacious cruise ship in order to feel safe. Fisher et al. (2018) reported that cruise passengers prefer to stay on the deck during a simulated Norovirus outbreak. The spaciousness of deck spaces is an indicator of social density in this current

study. The position of social interactions with other passengers, meanwhile, is likely to remain a moderately important indicator of social factors.

7.2.2. The Interrelationships among Cruise Service Quality, Cruise Line Image, Passenger Satisfaction and Passenger Loyalty

In this study, the interrelationships among the four higher-order constructs are as follows. Cruise service quality has a positive impact on cruise line image and passenger satisfaction. Cruise line image has a positive impact on passenger satisfaction and passenger loyalty. Passenger satisfaction has a positive impact on passenger loyalty. However, the research did not find that cruise service quality has a significant impact on passenger loyalty.

In the post-COVID-19 environment, some of these results are likely to change. Future cruise research may be able to confirm the positive effect of cruise service quality on passenger loyalty. In time of crisis, high performance of service quality can reduce customers' perceptions of risk (Chen and Chang, 2005; Garretson & Clow, 1999) and customers intend to repurchase when they feel the certainty of a service (Wu, Yeh & Hsiao, 2011). For these reasons, high cruise service quality may reduce post-COVID-19 passenger perceptions of risk and thus lead to increased customer loyalty.

The COVID-19 pandemic may also have an impact on cruise line image. Gaultier-Gaillard and Louisot (2006) argue that crises erode company reputations. In the current study, reputation is an indicator of cruise line image. Coombs and Holladay (2007), however, noted that a company's previous good reputation can minimise the negative effects of crisis. After crisis events, customers are still willing to use a service that had a previously good reputation. Penco, Profumo, Remondino and Bruzzi (2019) indicate that after cruise crises, potential cruisers prefer to take their future cruise holiday from cruise lines with previously strong reputations. Fortunately, all of the cruise ships represented in this study belong to the reputable cruise lines. Therefore, the current study's results involving the influence of cruise line image are likely to still apply in a post-COVID-19 environment.

7.2.3. The Mediating Effect of Cruise Line Image in the Modelling Framework

This research confirms the mediating effect of cruise line image in the cruise service quality – passenger satisfaction relationship and cruise service quality – passenger loyalty relationship. In the post-COVID-19 environment, cruise service quality is likely to have a positive impact on cruise line image and cruise line image is likely to have a positive impact on passenger satisfaction and passenger loyalty, so it is probable that cruise line image's mediation role will continue in future studies on cruise industry.

7.2.4. The Mediating Effect of Passenger Participation in the Modelling Framework

The results of this study confirm that passenger participation mediates the relationship between outcome quality – cruise service quality and between social factors – cruise service quality. However with likely changes in the importance and nature of passenger participation, this mediating effect may not be found in post-COVID-19 cruise service quality research. Past research indicates that during a simulated virus outbreak, most cruise passengers prefer to do more passive activities (e.g. enjoying sun on the deck) rather than participate in organised on-board activities (Fisher et al., 2018).

7.2.5. The Effect of Gender on the Research Constructs Evaluation

The current research did not find any significant perceptual differences between male and female passengers on the constructs under investigation. However, gender effects may be play a significant role in post-COVID-19 environment if health-oriented concerns become a more influential driver of satisfaction and loyalty. Garbarino and Strahilevitz (2004) report that female customers are more sensitive to health issues and related risks than male customers and these perceptual differences result in divergent customer behaviour across gender. Therefore, with the anticipated increase in the health-oriented concerns surrounding cruising, future cruise research may find there are perceptual differences between male and female passengers on the research constructs being evaluated.

References

Aaker, D.A. (1991). *Managing Brand Equity*. New York: Free Press.

Aaker, D.A. (2004). *Brand Portfolio Strategy: Creating Relevance, Differentiation, Energy, Leverage, and Clarity*. New York: Free Press.

Aaker, D.A., Kumar, V., Day, G.S., & Leone, R.P. (2010). *Research Marketing* (10th ed). New Jersey: John Wiley & Sons, Inc.

Aggett, M. & Lim, W.M. (2012). Service quality and the cruise industry. In M. Vogel, A. Papathanassis, B. Wolber (Ed.), *The business and management of ocean cruises* (pp.196-205). Wallingford: CAB International.

Akaroa & The Bays. (2018). *Akaroa cruise schedule 2018-2019.* Retrieved from https://akaroa.com/sites/default/files/downloads/Akaroa Cruise Ship Schedule 2018-2019_0.pdf

Akroush, M.N., Jraisat, L.E., Kurdieh, D.J., Al-Faouri, R.N., & Qatu, L.T. (2016). Tourism service quality and destination loyalty – the mediating role of destination image from international tourists' perspectives. *Tourism Review, 71*(1), 18-44. doi:10.1108/TR-11-2014-0057

Alexandris, K., Douka, S. & Balaska, P. (2012). Involvement with active leisure participation: Does service quality have a role? *Managing Leisure, 17*(1), 54-66. doi:10.1080/13606719.2011.638203

Alexandris, K., Kouthouris, C., Funk, D., & Chatzigianni, E. (2008). Examining the relationships between leisure constraints, involvement and attitudinal loyalty among Greek recreational skiers. *European Sport Management Quarterly, 8*(3), 247-264. doi:10.1080/16184740802224175

Alexandris, K., Zahariadis, P., Tsorbatzoudis, C., & Grouios, G. (2004). An empirical investigation of the relationships among service quality, customer satisfaction and psychological commitment in a health club context. *European Sport Management Quarterly, 4*(1), 36-52. doi:10.1080/16184740408737466

Amiot, C.E., Terry, D.J., Jimmieson, N.L., & Callan, V.J. (2006). A longitudinal investigation of coping processes during a merger: Implications for job satisfaction and organizational identification. *Journal of Management, 32*(4), 552-574. doi:10.1177/0149206306287542

Anderson, E.W., & Fornell, C. (1994). A customer satisfaction research prospectus. In T.R. Rust and R.L. Oliver (Eds), *Service quality: New directions in theory and practices* (pp.241-268). California: SAGE Publications.

Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin, 103*, 411-423.

Anderson, J.C., & Gerbing, D.W. (1991). Predicting the performance of measures in a confirmatory factor analysis with a pretest assessment of their substantive validities. *Journal of Applied Psychology, 76*(5), 732-740

Ang, S.H. (2014). *Research Design for Business & Management*. London: SAGE Publications.

Armstrong, G., Adam, S., Denize, S., & Kotler, P. (2012). *Principles of marketing* (5th ed). Frenchs Forest: Pearson Australia.

Armstrong, J.S., & Overton, T.S. (1977). Estimating nonresponse bias in mail surveys. *Journal of Marketing Research, 14*(3), 396-402.

Astin, A.W. (1999). Student involvement: A developmental theory for higher education. *Journal of College Student Development, 40*(5), 518-531.

Aydin, S., & Özer, G. (2005). The analysis of antecedents of customer loyalty in the Turkish mobile telecommunication market. *European Journal of Marketing, 39*(7/8), 910-925. doi:10.1108/03090560510601833

Babakus, E., & Boller, G.W. (1992). An empirical assessment of the SERVQUAL scale. *Journal of Business Research, 24*, 253-268.

Bagozzi, R.P., & Edwards, J.E. (1998). A general approach for representing constructs in organizational research. *Organizational Research Methods, 1*, 45-87.

Bagozzi, R.P., & Heatherton, T.F. (1994). A general approach to representing multifaceted personality constructs: Application to state self-esteem. *Structural Equation Modeling, 1*(1), 37-67.

Bakar, J.A., Clemes, M.D., & Bicknell, K. (2017). A comprehensive hierarchical model of retail banking. *International Journal of Bank Marketing, 35*(4), 662-684. doi:10.1108/IJBM-03-2016-0041

Baker, J. (1987). The role of the environment in marketing services: The consumer perspective. In J.A. Czepiel., C.A. Congram., J. Shanahan (Eds), *The services challenge: Integrating for competitive advantage* (pp.79-84). Chicago: American Marketing Association.

Baker, J., Levy, M., & Grewal, D. (1992). An experimental approach to marketing retail store environmental decisions. *Journal of Retailing, 68*(4), 445-460.

Bandalos, D.L., & Finney, S.J. (2001). Item parceling issues in structural equation modeling. In G.A. Marcoulides & R.E. Schumacker (Eds.), *Advanced structural equation modeling: A new developments and techniques*. Mahwah, NJ: Lawrence Erlbaum Associates.

Bandyopadhyay, S., Gupta, K., & Dube, L. (2005). Does brand loyalty influence double jeopardy? A theoretical and empirical study. *Journal of Product and Brand Management, 14*(7), 414-423. doi:10.1108/10610420510633369

Barich, H., & Kotler, P. (1991). A framework for marketing image management. *Sloan Management Review, 32*(2), 94-104.

Baron, R.M., & Kenny, D.A. (1986). The moderator-mediator variable distinction in social psychological research: Conceptual, strategic, and statistical considerations. *Journal of Personality & Social Psychology, 51*, 1173-1182.

Bartik, A.W., Bertrand, M., Cullen, Z.B., Glaeser, E.L., Luca, M., & Stanton, C.T. (2020). *How are small businesses adjusting to COVID-19? Early evidence from a survey (No. w26989)*. National Bureau of Economic Research.

Başarangil, İ. (2018). The relationships between the factors affecting perceived service quality, satisfaction and behavioral intentions among theme park visitors. *Tourism and Hospitality Research, 18*(4), 415-428. doi:10.1177/1467358416664566

Bentler, P.M. (1990). Comparative fit indexes in structural models. *Psychological Bulletin, 107*, 238-246.

Bitner, M.J. (1992). Servicescapes: The impact of physical surroundings on customers and employees. *Journal of Marketing, 56*(2), 57-71.

Bitner, M.J., & Hubert, A.R. (1994). Encounter satisfaction versus overall satisfaction versus quality. In T.R. Rust and R.L. Oliver (Eds), *Service quality: New directions in theory and practices* (pp.72-95). California: SAGE Publications.

Blattberg, R.C. & Sen, S.K. (1974). Market segmentation using models of multidimensional purchasing behavior. *Journal of Marketing, 38*(4), 20-28.

Blešić, I., Popov-Raljić, J., Uravić, L., Stankov, U., Deri, L., Pantelić, M., & Armenski, T. (2014). An importance-performance analysis of service quality in spa hotels. *Economic Research-Ekonomska Istraźivanja, 27*(1), 483-495. doi:10.1080/1331677X.2014.967537

Bollen, K., & Lennox, R. (1991). Conventional wisdom on measurement: A structural equation perspective. *Psychological Bulletin, 110*(2), 305-314.

Bollen, K.A. (1989). A new incremental fit index for general structural models. *Sociological Methods & Research, 17*, 303-316.

Bolton, R.N., & Drew, J.H. (1991). A longitudinal analysis of the impact of service changes on customer attitudes. *Journal of Marketing, 55*(1), 1-9.

Boomsma, A. (1983). *On the robustness of LISREL (maximum likelihood estimation) against small sample size and nonnormality*. Amsterdam: Sociometric Research Foundation.

Boulding, W., Ajay, K., Staelin, R., & Zeithaml, V.A. (1993). A dynamic process model of service quality: from expectations to behavioral intentions. *Journal of Marketing Research, 30*(1), 7-27.

Bouman, M., & van der Wiele, T. (1992). Measuring service quality in the car service industry: Building and testing an instrument. *International Journal of Service Industry Management, 3*(4), 4-16. doi:10.1108/09564239210019441

Brady, M.K., & Cronin, Jr.J.J. (2001). Some new thoughts on conceptualizing perceived service quality: A hierarchical approach. *Journal of Marketing, 65*(3), 34-49.

Branchik, B. (2014). Staying afloat: A history of maritime passenger industry marketing. *Journal of Historical Research in Marketing, 6*(2), 234-257. doi:10.1108/JHRM-07-2013-0044

Brida, J.G. & Zapata, S. (2010). Cruise tourism: economic, socio-cultural and environmental impacts. *International Journal Leisure and Tourism Marketing, 1*(3), 205-226.

Brinkmann, S. (2013). *Qualitative interviewing: Understanding qualitative research*. New York: Oxford University Press.

Brochado, A. (2009). Comparing alternative instruments to measure service quality in higher education. *Quality Assurance in Education, 17*(2), 174-190. doi:10.1108/09684880910951381

Brodie, R., Hollebeek, L., Juric, B. & Ilic, A. (2011). Customer engagement: Conceptual domain, fundamental propositions & implications for research in service marketing. *Journal of Service Research, 14*(3), 252-271. doi:10.1177/1094670511411703

Brown, T.J., Churchill, G.A.Jr. & Peter, J.P. (1993). Improving the measurement of service quality. *Journal of Retailing, 69*(1), 127-139.

Bryman, A., & Bell, A. (2011). *Business research methods* (3rd ed). New York: Oxford University Press.

Byrne, B.M. (2010). *Structural equation modeling with AMOS: Basic concepts, applications, and programming* (2nd ed). New York: Routledge.

Butcher, K. (2005). Differential impact of social influence in the hospitality encounter. *International Journal of Contemporary Hospitality Management, 17*(2), 125-135. doi:10.1108/09596110510582323

Buttle, F. (1996). SERVQUAL: Review, critique, research agenda. *European Journal of Marketing, 30*(1), 8-32.

Carman, J.M. (1990). Consumer perceptions of service quality: An assessment of the SERVQUAL dimensions. *Journal of Retailing, 66*(1), 33-55.

Carnival Corporation & plc. (2020). *Corporate information*. Retrieved from https://www.carnivalcorp.com/corporate-information/our-brands

Caro, L.M.,& García, J.A.M. (2007). Measuring perceived service quality in urgent transport service. *Journal of Retailing and Consumer Services, 14*, 60-72. doi:10.1016/j.jretconser.2006.04.001

Cartledge, G. (2012). Cruise packages. In M. Vogel, A. Papathanassis, B. Wolber (Ed.), *The business and management of ocean cruises* (pp.196-205). Wallingford: CAB International.

Caruana, A. (2002). Service loyalty: The effects of service quality and the mediating role of customer satisfaction. *European Journal of Marketing, 36*(7/8), 811-828. doi:10.1108/03090560210430818

Cattell, R.B. (1966). The scree test for the number of factors. *Multivariate Behavioral Research, 1*(2), 245-276.

Channoi, R., Clemes, M.D. & Dean, D.L. (2018). A comprehensive hierarchical model of beach resort hotel stays. *Journal of Hospitality and Tourism Management, 37*, 107-116. doi:10.1016/j.jhtm.2017.10.011

Chaudhuri, A. & Holbrook, M.B. (2001). The chain of effects from brand trust and brand affect to brand performance: The role of brand loyalty. *Journal of Marketing, 65*(2), 81-93.

Chen, T., & Chang, H-S. (2005). Reducing consumers' perceived risk through banking service quality cues in Taiwan. *Journal of Business and Psychology, 19*(4), 521-540. doi:10.1007/s10869-005-4523-5

Chien, L.H., & Chi, S.Y. (2019). Corporate image as a mediator between service quality and customer satisfaction: Difference across categorized exhibitors. *Heliyon, 5*(e01307), 1-24. doi:10.1016/j.heliyon.2019.e01307

Chou, C.P., & Bentler, P.M. (1995). Estimation and tests in structural equation modeling. In R.H. Hoyle (Ed.), *Structural equation modeling: Concepts, issues, and applications* (pp.37-55). Thousand Oaks, CA: Sage.

Chua, B-L., Lee, S., Goh, B., & Han, H. (2015). Impacts of cruise service quality and price on vacationers' cruise experience: Moderating role of price sensitivity. *International Journal of Hospitality Management, 44*, 131-145. doi:10.1016/j.ijhm.2014.10.012

Chua, B-L., Lee, S., & Han, H. (2017). Consequences of cruise line involvement: A comparison of first-time and repeat passengers. *International Journal of Contemporary Hospitality Management, 29*(6), 1658-1683. doi:10.1108/IJCHM-09-2015-0452

Chua, B-L., Lee, S., Kim, H-C., & Han, H. (2019). Investigation of cruise vacationers' behavioral intention formation in the fast-growing cruise industry: The moderating impact of gender and age. *Journal of Vacation Marketing, 25*(1), 51-70. doi:10.1177/1356766717750419

Churchill, G.A.Jr. (1979). A paradigm for developing better measures of marketing constructs. *Journal of Marketing Research, 16*(1), 64-73.

Churchill, G.A.Jr., & Surprenant, C. (1982). An investigation into the determinants of customer satisfaction. *Journal of Marketing Research, 19*(4), 491-504.

Clemes, M.D., Brush, G.J., & Collins, M.J. (2011a). Analysing the professional sport experience: A hierarchical approach. *Sport Management Review, 14*, 370-388. doi:10.1016/j.smr.2010.12.004

Clemes, M.D., Dean, D.L. & Thitiya, T. (2020). Modelling the behavioural intentions of day spa customers. *Asia Pacific Journal of Marketing and Logistics, 32*(8), 1699-1716. doi:10.1108/APJML-04-2019-0258

Clemes, M.D., Gan, C., & Kao, T-H. (2007). University student satisfaction: An empirical analysis. *Journal of Marketing for Higher Education, 17*(2), 292-325. doi:10.1080/08841240801912831

Clemes, M.D., Gan, C., Kao, T-H., & Choong, M. (2008). An empirical analysis of customer satisfaction in international air travel. *Innovative Marketing, 4*(2), 49-62.

Clemes, M.D., Gan, C., & Ren, M. (2011b). Synthesizing the effects of service quality, value and customer satisfaction on behavioural intentions in the motel industry: An empirical analysis. *Journal of Hospitality and Tourism Research, 35*(4), 530-568. doi:10.1177/1096348010382239

Clemes, M.D., Mohi, Z., Li, X., & Hu, B. (2018). Synthesizing moderate upscale restaurant patrons' dining experiences. *Asia Pacific Journal of Marketing and Logistics, 30*(3), 627-651. doi:10.1108/APJML-06-2017-0115

Clemes, M.D., Mollenkopf, D., & Burn, D. (2000). An investigation of marketing problems across service typologies. *Journal of Services Marketing, 14*(7), 573-594. doi:10.1108/08876040010352754

Clemes, M.D., Shu, X., & Gan, C. (2014). Mobile communications: A comprehensive hierarchical modelling approach. *Asia Pacific Journal of Marketing and Logistics, 26*(1), 114-146. doi:10.1108/APJML-04-2013-0040

Clemes, M.D., Wu, J.H-C., Hu, B-H, & Gan, C. (2009). An empirical study of behavioral intentions in the Taiwan hotel industry. *Innovative Marketing, 5*(3), 30-50.

Clow, K.E. & Vorhies, D.W. (1993). Building a competitive advantage for service firms: Measurement of consumer expectations of service quality. *Journal of Service Marketing, 7*(1), 22-32. doi:10.1108/08876049310026079

Cohen, J., Cohen, P., West, S.G., & Aiken, L. (2003). *Applied multiple regression/correlation analysis for the behavioral sciences*(3rd ed). New Jersey: Lawrence Erlbaum.

Coombs, W.T., & Holladay, S.J. (2007). The negative communication dynamic: Exploring the impact of stakeholder affect on behavioral intention. *Journal of Communication Management, 11*(4), 300-312. doi:10.1108/13632540710843913

Cooper, D.R. & Schindler, P.S. (2014). *Business Research Methods* (12th ed). New York: McGraw-Hill.

CrewCenter. (2017). *Bali, Indonesia cruise ship schedule 2018*. Retrieved from crew-center.com/bali-indonesia-cruise-ship-schedule-2018

CrewCenter. (2018). *Bali, Indonesia cruise ships schedule 2019*. Retrieved from crew-center.com/bali-indonesia-cruise-ships-schedule-2019

Cronin, Jr.J.J. & Taylor, S.A. (1992). Measuring service quality: A reexamination and extension. *Journal of Marketing, 56*, 55-68.

Cruise Critic. (2020, June). *Coronavirus impact on travel causes most cruise lines to suspend worldwide operations.* Retrieved from https://www.cruisecritic.com/news/5182

Cruise Lines International Association (CLIA). (2004). *The overview spring 2004*. Retrieved from http://www.f-cca.com/downloads/CLIASPRING04.pdf

Cruise Lines International Association (CLIA). (2016). *2017 cruise industry outlook.* Retrieved from https://www.cruising.org/about-the-industry/research/2017-state-of-the-industry.pdf

Cruise Lines International Association (CLIA). (2017a). *2018 cruise industry outlook*. Retrieved from https://cruising.org/-/media/research-updates/research/featured/2018-clia-state-of-the-industry.pdf

Cruise Lines International Association (CLIA). (2017b). *Cruise industry ocean source market report – Australia 2017*. Retrieved from https://www.cruising.org.au/Tenant/C0000003/Cruise Industry Source Market Report (1).pdf

Cruise Lines International Association (CLIA). (2019). *2019 cruise trends & industry outlook*. Retrieved from https://cruising.org/news-and-research/-/media/CLIA/Research/CLIA 2019 State of the Industry.pdf

Cruise Lines International Association (CLIA). (2020). *The economic contribution of the international cruise industry globally in 2019*. Retrieved from https://cruising.org/-/media/research-updates/research/global-cruise-impact-analysis---2019-final.ashx

Cruise Lines International Association (CLIA). (2021a). *2021 state of the cruise industry outlook*. Retrieved from https://cruising.org/-/media/research-updates/research/2021-state-of-the-cruise-industry_optimized.ashx

Cruise Lines International Association (CLIA). (2021b). *Cruise industry regulation*. Retrieved from https://cruising.org/en/about-the-industry/policy-priorities/cruise-industry-regulation

Cruise Market Watch. (2015). *Growth*. Retrieved from https://www.cruisemarketwatch.com/growth/

da Silva, A.L.R. (2021). An overview of the impact of COVID-19 on the cruise industry with considerations for Florida. *Transportation Research Interdisciplinary Perspectives, 10*(100391), 1-6. doi:10.1016/j.trip.2021.100391

Dabholkar, P.A., Shepherd, C.D., & Thorpe, D.I. (2000). A comprehensive framework for service quality: An investigation of critical conceptual and measurement issues through a longitudinal study. *Journal of Retailing, 76*(2), 139-173.

Dabholkar, P.A., Thorpe, D.I., & Rentz, J.O. (1996). A measure of service quality for retail store: Scale development and validation. *Journal of the Academy of Marketing Science, 24*(1), 3-16.

Dagger, T.S., Sweeney, J.C., & Johnson, L.W. (2007). A hierarchical model of health service quality: Scale development and investigation of an integrated model. *Journal of Service Research, 10*(2), 123-142. doi:10.1177/1094670507309594

Davidoff, P.G., & Davidoff, D.S. (1994). *Sales and marketing for travel and tourism* (2nd ed). United Kingdom: Prentice-Hall.

Department for Transport. (2016). *Regulation (EU) No.1177/2010 concerning the rights of passengers when travelling by sea and inland waterways*. Retrieved from https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/573025/eu-regulation-maritime-passenger-rights-note-0.pdf

Diamantopoulos, A., & Winklhofer, H.M. (2001). Index construction with formulative indicators: An alternative to scale development. *Journal of Marketing Research, 38*(5), 269-277.

Dick, A.S., & Basu, K. (1994). Customer loyalty: Toward an integrated conceptual framework. *Journal of Academy of Marketing Science, 22*(2), 99-113.

Douglas, A.C., Mills, J.E., & Phelan, K.V. (2010). Smooth sailing?: Passengers' assessment of cruise brand equity. *Journal of Travel & Tourism Marketing, 27*(7), 649-675. doi:10.1080/10548408.2010.519300

Dowling, R.K. (2006). *Cruise ship tourism*. Wallingford: CAB International.

Dowling, R.K., & Vasudavan, T. (2000). Cruising in the new millennium. *Tourism Recreation Research, 25*(3), 17-27. doi:10.1080/02508281.2000.11014921

Dowling, R.K., & Weeden, C. (2017). *Cruise ship tourism* (2nd ed). Wallingford: CAB International.

Dray, S., & Josse, J. (2015). Principal component analysis with missing values: A comparative survey of methods. *Plant Ecology, 216*(5), 657-667. doi:10.1007/s11258-014-0406-z

Duckworth, A.L., & Kern, M.L. (2011). A meta-analysis of the convergent validity of self-control measures. *Journal of Research in Personality, 45*, 259-268. doi:10.1016/j.jrp.2011.02.004

Echtner, C.M., & Ritchie, J.B. (1991). The meaning and measurement of destination image. *Journal of Tourism Studies, 2*(2), 2-12.

Ehrenberg, A.S.C., Goodhardt, G.J., & Barwise, P.B. (1990). Double jeopardy revisited. *Journal of Marketing, 54*, 82-91.

Fabrigar, L.R., & Wegener, D.T. (2012). *Exploratory factor analysis: Understanding Statistics*. New York: Oxford University Press.

Faria, N., & Mendes, L. (2013). Organizational image's partial mediation role between quality and users' satisfaction. *The Service Industries Journal, 33*(13-14), 1275-1293. doi:10.1080/02642069.2013.815733

Farrell, A.M. (2010). Insufficient discriminant validity: A comment on Bove, Pervan, Beatty, and Shiu (2009). *Journal of Business Research, 63*, 324-327. doi:10.1016/j.jbusres.2009.05.003

Fatima, J.K., & Razzaque, M.A. (2013). Roles of customer involvement in rapport and satisfaction. *Asia Pacific Journal of Marketing and Logistics, 25*(3), 452-471. doi:10.1108/APJML-09-2012-0092

Field, A. (2009). *Discovering statistics using SPSS*. London: Sage Publications.

Fisher, J.J., Almanza, B.A., Behnke, C., Nelson, D.C., & Neal, J. (2018). Norovirus on cruise ships: Motivation for handwashing? *International Journal of Hospitality Management, 75*, 10-17. doi:10.1016/j.ijhm.2018.02.001

Forgas-Coll, S., Palau-Saumell, R., Matute, J., & Tárrega, S. (2017). How do service quality, experiences and enduring involvement influence tourists' behavior? An empirical study in the Picasso and Miro museums in Barcelona. *International Journal of Tourism Research, 19*, 246-256. doi:10.1002/jtr.2107

Forgas-Coll, S., Palau-Saumell, R., Sánchez-García, J., & Caplliure-Giner, E.M. (2014). The role of trust in cruise passenger behavioral intentions: The moderating effects of the cruise line brand. *Management Decision, 52*(8), 1346-1367. doi:10.1108/MD-09-2012-0674

Fornell, C., & Bookstein, F.L. (1982). Two structural equation models LISREL and PLS applied to consumer exit-voice theory. *Journal of Marketing Research, 19*(4), 440-452.

Gagliano, K.B., & Hathcote, J. (1994). Customer expectations and perceptions of service quality in retail apparel specialty stores. *Journal of Services Marketing, 8*(1), 60-69.

Gan, C., Cohen, D., Clemes, M., & Chong, E. (2006). A survey of customer retention in the New Zealand banking industry. *Banks and Bank Systems, 1*(4), 83-99.

Garbarino, E., & Strahilevitz, M. (2004). Gender differences in the perceived risk of buying online and the effects of receiving a site recommendation. *Journal of Business Research, 57*, 768-775. doi:10.1016/S0148-2963(02)00363-6

Garretson, J.A., & Clow, K.E. (1999). The influence of coupon face value on service quality expectations, risk perceptions and purchase intentions in the dental industry. *Journal of Services Marketing, 13*(1), 59-72. doi:10.1108/08876049910256122

Gaultier-Gaillard, S., & Louisot, J-P. (2006). Risks to reputation: A global approach. *The Geneva Papers, 31*, 425-445. doi:10.1057/palgrave.gpp.2510090

Gibson, P., & Parkman, R. (2019). *Cruise operations management: Hospitality perspectives* (3rd ed). Abingdon, Oxon: Routledge

Gladstone, C. (2019). *Compare the 17 best small cruise ship lines*. Retrieved from https://www.cruisecritic.com.au/articles.cfm?ID=1004

Gorsuch, R. (1983). *Factor analysis*. New Jersey: Lawrence Erlbaum Associates.

Gössling, S., Scott, D., & Hall, C.M. (2020). Pandemics, tourism and global change: A rapid assessment of COVID-19. *Journal of Sustainable Tourism*, 1-20. doi:10.1080/09669582.2020.1758708

Greenbaum, T. (1997). *The handbook for focus group research*(2nd ed). Thousand Oaks: Sage.

Grewal, R., Cote, J.A., & Baumgartner, H. (2004). Multicollinearity and measurement error in structural equation models: Implications for theory testing. *Marketing Science, 23*(4), 519-529. doi:10.1287/mksc.1040.0070

Grönroos, C. (1984). A service quality model and its marketing implications. *European Journal of Marketing, 18*(4), 36-44. doi:10.1108/EUM0000000004784

Grove, S.J. and Fisk, R.P. (1997). The impact of other customers on service experiences: A critical incident examination of "getting along". *Journal of Retailing, 73*(1), 63-85.

Guliyev, G., Avci, T., Öztüren, A., & Safaeimanesh, F. (2019). Effects of professionalism on employee satisfaction and organizational commitment at five star hotels in Baku. *Journal of East European Management Studies, 24*(3), 423-446. doi:10.5771/0949-6181-2019-3-423

Gursoy, D., & Gavcar, E. (2003). International leisure tourists' involvement profile. *Annals of Tourism Research, 30*(4), 906-926. doi:10.1016/S0160-7383(03)00059-8

Hair, J.F.Jr., Black, W.C., Babin, B.J., & Anderson, R.E. (2010). *Multivariate data analysis: A global perspective* (7th ed). New Jersey: Pearson.

Hair, J.F.Jr., Black, W.C., Babin, B.J., Anderson, R.E., & Tatham, R.L. (2006). *Multivariate data analysis* (6th ed). New Jersey: Pearson.

Han, H., Eom, T., Chung, H., Lee, S., Ryu, H.B., & Kim, W. (2019). Passenger repurchase behaviours in the green cruise line context: Exploring the role of quality, image, and physical environment. *Sustainability 2019, 11*(7), 1985-1999. doi:10.3390/su11071985

Han, H., & Hyun, S.S. (2018). Role of motivations for luxury cruise traveling, satisfaction, and involvement in building traveler loyalty. *International Journal of Hospitality Management, 70*, 75-84. doi:10.1016/j.ijhm.2017.10.024

Han, X., Kwortnik, R.J., & Wang, C. (2008). Service loyalty: An integrative model and examination across service contexts. *Journal of Service Research, 11*, 22-42. doi:10.1177/1094670508319094

Hapsari, R., Clemes, M.D., & Dean, D. (2017). The impact of service quality, customer engagement and selected marketing constructs on airline passenger loyalty. *International Journal of Quality and Service Sciences, 9*(1), 21-40. doi:10.1108/IJQSS-07-2016-0048

Hardin, A.M., Chang, J-C., & Fuller, M.A. (2008). Formative vs reflective measurement: Comment on Marakas, Johnson, and Clay (2007). *Journal of the Association for Information Systems, 9*(9), 519-534. doi:10.17705/1jais.00170

Harrigan, P., Evers, U., Miles, M.P. & Daly, T. (2018). Customer engagement and the relationship between involvement, engagement, self-brand connection and brand usage intent. *Journal of Business Research, 88*, 388-396. doi:10.1016/j.jbusres.2017.11.046

Harris, L.C., and Goode, M.M.H. (2004). The four levels of loyalty and the pivotal role of trust: A study of online service dynamics. *Journal of Retailing, 80*, 139-158. doi:10.1016/j.jretai.2004.04.002

Haywood-Farmer, J. (1988). A conceptual model of service quality. *International Journal of Operations and Production Management, 8*(6), 19-29. doi:10.1108/eb054839

Hennink, M.M. (2014). *Focus group discussions: Understanding qualitative research*. New York: Oxford University Press.

Hennink, M.M., Hutter, I., & Bailey, A. (2011). *Qualitative research methods*. London: Sage.

Henthorne, T.L., George, B.P. & Smith, W.C. (2013). Risk perception and buying behavior: An examination of some relationships in the context of cruise tourism in Jamaica. *International Journal of Hospitality and Tourism Administration, 14*(1), 66-86. doi:10.1080/15256480.2013.753808

Hightower, R., Brady, M.K., & Baker, T.L. (2002). Investigating the role of physical environment in hedonic service consumption: An exploratory study of sporting events. *Journal of Business Research, 55*, 697-707.

Hinton, P.R.(2004). *SPSS explained* (2nd ed). East Sussex: Routledge.

Holmbeck, G.N. (1997). Toward terminological, conceptual, and statistical clarity in the study of mediators and moderators: Examples from the child-clinical and pediatric psychology literatures. *Journal of Consulting and Clinical Psychology, 65*, 599-610.

Hopwood, C.J., & Donnellan, M.B. (2010). How should the internal structure of personality inventories be evaluated? *Personality and Social Psychology Review, 14*(3), 332-346. doi:10.1177/1088868310361240

Hosany, S., & Witham, M. (2010). Dimensions of cruisers' experiences, satisfaction, and intention to recommend. *Journal of Travel Research, 49*(3), 351-364. doi:10.1177/0047287509346859

Howat, G., & Assaker, G. (2016). Outcome quality in participant sport and recreation service quality models: Empirical results from public aquatic centres in Australia. *Sport Management Review, 19*, 520-535. doi:10.1016/j.smr.2016.04.002

Hu, L-T., & Bentler, P.M. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling, 6*, 1-55.

Huang, J., & Hsu, C.H.C. (2009). Interaction among fellow cruise passengers: Diverse experiences and impacts. *Journal of Travel and Tourism Marketing, 26*, 547-567. doi:10.1080/10548400903163103

Huang, J. & Hsu, C.H.C. (2010). The impact of customer-to-customer interaction on cruise experience and vacation satisfaction. *Journal of Travel Research, 49*(1), 79-92. doi:10.1177/0047287509336466

Iwasaki, Y., & Havitz, M.E. (2004). Examining relationships between leisure involvement, psychological commitment and loyalty to a recreation agency. *Journal of Leisure Research, 36*(1), 45-72. doi:10.1080/00222216.2004.11950010

Jain, S.K., & Gupta, G. (2004). Measuring service quality: SERVQUAL vs SERVPERF scales. *Vikalpa, 29*(2), 25-37.

Jaiswal, A.K., & Niraj, R. (2011). Examining mediating role of attitudinal loyalty and nonlinear effects in satisfaction-behavioral intentions relationship. *Journal of Services Marketing, 25*(3), 165-175. doi:10.1108/08876041111129155

Jang, Y., Ro, H., & Kim, T-H. (2015). Social servicescape: The impact of social factors on restaurant image and behavioral intentions. *International Journal of Hospitality & Tourism Administration, 16*(3), 290-309. doi:10.1080/15256480.2015.1054758

Janssens, W., De Pelsmacker, P., Wijnen, K., & Van Kenhove, P. (2008). *Marketing research with SPSS*. New York: Pearson Education.

Jarvis, C.B., MacKenzie, S.B., & Podsakoff, P.M. (2003). A critical review of construct indicators and measurement model misspecification in marketing and consumer research. *Journal of Consumer Research, 30*(2), 199-218.

Jin, N., Lee, S., & Huffman, L. (2012). Impact of restaurant experience on brand image and customer loyalty: Moderating role of dining motivation. *Journal of Travel and Tourism Marketing, 29*(6), 532-55. doi:10.1080/10548408.2012.701552

Johnson, H. (1987). *The Cunard story*. London: Whittet Books.

Jöreskog, K.G. (1969). A general approach to confirmatory maximum likelihood factor analysis. *Psychometrika, 34*, 183-202.

Jöreskog, K.G., Olsson, U.H., & Wallentin, F.Y. (2016). *Multivariate analysis with LISREL*. Switzerland: Springer International Publishing.

Jöreskog, K.G., & Sörbom, D. (1993). *LISREL 8: Structural equation modeling with the SIMPLIS command language*: Scientific Software International.

Jöreskog, K.G., & van Thillo, M. (1972). *LISREL: A general computer program for estimating a linear structural equation system involving multiple indicators of unmeasured variables.* Research Bulletin 72-56. Princeton, N.J: Educational Testing Service.

Jorgensen, T.D. (2017). Applying permutation tests and multivariate modification indices to configurally invariant models that need respecification. *Frontiers in Psychology, 8*(1455), 1-9. doi:10.3389/fpsyg.2017.01455

Josiam, B.M., Sohail, S.M., & Monteiro, P. A. (2007). Curry cuisine: Perceptions of Indian restaurants in Malaysia. *Tourismos: An International Multidisciplinary Journal of Tourism, 2*(2), 25-37.

Kahn, B.E., Kalwani, M.U., & Morrison, D.G. (1986). Measuring variety seeking and reinforcement behaviors using panel data. *Journal of Marketing Research, 23*, 89-100.

Kaiser, H.F. (1958). The varimax criterion for analytic rotation in factor analysis. *Psychometrika, 23*, 187-200

Kaiser, H.F., & Rice, J. (1974). Educational and psychological measurement. *Little Jiffy, Mark IV*, 34, 11.

Kamenidou, I.C., Mamalis, S.A., Priporas, C-V., & Kokkinis, G.F. (2014). Segmenting customers based on perceived importance of wellness facilities. *Procedia Economics and Finance, 9*, 417-424. doi:10.1016/S2212-5671(14)00043-4

Kandampully, J., & Suhartanto, D. (2003). The role of customer satisfaction and image in gaining customer loyalty in the hotel industry. *Journal of Hospitality & Leisure Marketing, 10* (1-2), 3-25. doi:10.1300/J150v10n01_02

Kang, G-D., & James, J. (2004). Service quality dimensions: An examination of Gronroos's service quality model. *Managing Service Quality: An International Journal, 14*(4), 266-277. doi:10.1108/09604520410546806

Kasiri, L.A., Cheng., K.T.G., Sambasivan, M., & Sidin, S.M. (2017). Integration of standardization and customization: Impact on service quality, customer satisfaction, and loyalty. *Journal of Retailing and Consumer Services, 35*, 91-97. doi:10.1016/j.jretconser.2016.11.007

Kayaman, R., & Arasli, H. (2007). Customer based brand equity: Evidence from the hotel industry. *Managing Service Quality, 17*(1), 92-109. doi:10.1108/09604520710720692

Kim, M-K., Park, M-C., & Jeong, D-H. (2004). The effects of customer satisfaction and switching barrier on customer loyalty in Korean mobile telecommunication services. *Telecommunications Policy, 28*(2), 145-159. doi:10.1016/j.telpol.2003.12.003

Kim, S., Scott, D., & Crompton, J.L. (1997). An exploration of the relationships among social psychological involvement, behavioral involvement, commitment, and future intentions in the context of birdwatching. *Journal of Leisure Research, 29*(3), 320-341.

Klein, R.A. (2006). Turning water into money: The economics of the cruise industry. In Dowling, R.K. (ed.) *Cruise Ship Tourism* (pp.261-269). Wallingford: CAB International.

Kline, R.B. (2011). *Principles and practice of structural equation modeling* (3rd ed). New York: The Guilford Press.

Kline, R.B. (2016). *Principles and practice of structural equation modeling* (4nd ed). New York: The Guilford Press.

Kraemer, H.C., Wilson, G.T., Fairburn, C.G., & Agras, W.S. (2002). Mediators and moderators of treatment effects in randomized clinical trials. *Archives of General Psychiatry, 59*, 877-883. doi:10.1001/archpsyc.59.10.877

Krieger, B., Moskowitz, H., & Rabino, S. (2005). What consumers want from a cruise vacation: Using internet-enabled conjoint analysis to understand the customer's mind. *Journal of Hospitality and Leisure Marketing*, 13(1), 83-111. doi:10.1300/J150v13n01_06

Krueger, R. (2013). *Evaluator as strory teller*. Retrieved from http://www.tc.umn.edu/~rkrueger/story_eaas.html

Kwortnik, R.J. (2008). Shipscape influence on the leisure cruise experience. *International Journal of Culture, Tourism and Hospitality Research, 2*(4), 289-311. doi:10.1108/17506180810908961

Kwortnik, R.J.Jr, & Ross, W.T.Jr. (2007). The role of positive emotions in experiential decisions. *International Journal of Research in Marketing, 24*, 324-335. doi:10.1016/j.ijresmar.2007.09.002

Kyle, G., Graefe, A., Manning, R., & Bacon, J. (2004). Effect of activity involvement and place attachment on recreationists' perceptions of setting density. *Journal of Leisure Research, 36*(2), 209-231.

Ladhari, R. (2009). A review of twenty years of SERVQUAL research. *International Journal of Quality and Service Sciences, 1*(2), 172-198. doi:10.1108/17566690910971445

Ladhari, R., Ladhari, I., & Morales, M. (2011). Bank service quality: Comparing Canadian and Tunisian customer perceptions. *International Journal of Bank Marketing, 29*(3), 224-246. doi:10.1108/02652321111117502

Lari, L., Jabeen, F., & Iyanna, S. (2020). Prioritising theme park service quality in Islamic contexts: An analytic hierarchy process approach. *International Journal of Culture, Tourism and Hospitality Research, 14*(2), 225-237. doi:10.1108/IJCTHR-10-2018-0147

Lau, K.C., & Phau, I. (2010). Impact of gender on perceptual fit evaluation for prestige brands. *Journal of Brand Management, 17*, 354-367. doi:10.1057/bm.2009.30

Laurent, G., & Kapferer, J.N. (1985). Measuring consumer involvement profiles. *Journal of Marketing Research, 22*(1), 41-53.

Lee, S.H., Bai, B., & Murphy, K. (2012). The role demographics have on customer involvement in obtaining a hotel discount and implications for hotel revenue management strategy. *Journal of Hospitality Marketing & Management, 21*(5), 569-588. doi:10.1080/19368623.2012.682622

Liat, C.B., Mansori, S., & Huei, C.T. (2014). The associations between service quality, corporate image, customer satisfaction, and loyalty: Evidence from the Malaysian hotel industry. *Journal of Hospitality Marketing & Management, 23*(3), 314-326. doi:10.1080/19368623.2013.796867

Lien, C-H., Wen, M-J., Huang, L-C., & Wu, K-L. (2015). Online hotel booking: The effects of brand image, price, trust and value on purchase intentions. *Asia Pacific Management Review, 20*, 210-218. doi:10.1016/j.apmrv.2015.03.005

Little, T.D., Cunningham, W.A., Shahar, G., & Widaman, K.F. (2002). To parcel or not to parcel: Exploring the question, weighing the merits. *Structural Equation Modeling: A Multidisciplinary Journal, 9*, 151-173.

Liu-Lastres, B., Schroeder, A. & Pennington-Gray, L. (2019). Cruise line customers' responses to risk and crisis communication messages: An application of the risk perception attitude framework. *Journal of Travel Research, 58*(5), 849-865. doi:10.1177/0047287518778148

Lobo, A.C. (2008). Enhancing luxury cruise liner operators' competitive advantage: A study aimed at improving customer loyalty and future patronage. *Journal of Travel & Tourism Marketing, 25*(1), 1-12. doi:10.1080/10548400802157867

Lovelock, C., & Wirtz, J. (2007). *Services Marketing: People, Technology, Strategy* (7th ed). New Jersey: Prentice Hall.

Low, G.S., & Lamb, C.W.Jr. (2000). The measurement and dimensionality of brand associations. *Journal of Product and Brand Management, 9*(6), 350-370.

Lu, L., Chi, C.G., & Liu, Y. (2015). Authenticity, involvement, and image: Evaluating tourist experiences at historic districts. *Tourism Management, 50*, 85-96. doi:10.1016/j.tourman.2015.01.026

Lyu, J., Hu, L., Hung, K. & Mao, Z. (2017). Assessing servicescape of cruise tourism: The perception of Chinese tourists. *International Journal of Contemporary Hospitality Management, 29*(10), 2556-2572. doi:10.1108/IJCHM-04-2016-0216

m.e consulting. (2018). *Cruise tourism's contribution to the New Zealand economy 2018*. Retrieved from https://newzealandcruiseassociation.com/wp-content/uploads/2018/12/Cruise-Tourisms-Contribution-to-the-New-Zealand-Economy-2018-FINAL.pdf

MacCallum, R.C., Roznowski, M., & Necowitz, L.B. (1992). Model modifications in covariance structure analysis. The problem of capitalization on change. *Psychological Bulletin, 111*, 490-504.

Makanyeza, C., & Chikazhe, L. (2017). Mediators of the relationship between service quality and customer loyalty: Evidence from the banking sector in Zimbabwe. *International Journal of Bank Marketing, 35*(3), 540-556. doi:10.1108/IJBM-11-2016-0164

Malhotra, N.K., Birks, D.F., & Wills, P. (2012). *Marketing research an applied approach* (4th ed). Essex: Pearson Education Limited.

Malhotra, N.K., Nunan, D., & Birks, D.F. (2017). *Marketing research an applied approach* (5th ed). Harlow: Pearson Education Limited.

Mancini, M. (2004). *Cruising: A guide to the cruise line industry* (2nd ed). New York: Delmar Learning.

Mangold, W.G., & Babakus, E. (1991). Service Quality: The front-stage vs. the back-stage perspective. *The Journal of Service Marketing, 5*(4), 59-70.

Mariampolski, H. (2001). *Qualitative marketing research*. Thousand Oaks: Sage.

Martenson, R. (2007). Corporate brand image, satisfaction and store loyalty: A study of the store as a brand, store brands and manufacturer brands. *International Journal of Retail and Distribution Management, 35*(7), 544-555. doi:10.1108/09590550710755921

Maruskin, L.A., Thrash, T.M., & Elliot, A.J. (2012). The chills as a psychological construct: Content universe, factor structure, affective composition, elicitors, trait antecedents, and consequences. *Journal of Personality and Social Psychology, 103*(1), 135-157. doi:10.1037/a0028117

Mason, C.H., & Perreault, W.D.Jr. (1991). Collinearity, power, and interpretation of multiple regression analysis. *Journal of Marketing Research, 28*(3), 268-280.

McDougall, G.H.G. & Levesque, T.J. (1994). A revised view of service quality dimensions: An empirical investigation. *Journal of Professional Services Marketing, 11*(1), 189-210. doi:10.1300/J090v11n01_13

McNeish, D. (2017). Exploratory factor analysis with small samples and missing data. *Journal of Personality Assessment, 99*(6), 637-652. doi:10.1080/00223891.2016.1252382

Meloun, M., & Militký, J. (2011). *Statistical data analysis: A practical guide*. New Delhi: Woodhead Publishing Limited.

Mertler, C.A. & Reinhart, R.V. (2017). *Advanced and multivariate statistical methods: Practical application and interpretation* (6th ed). New York: Routledge.

Meyers, L.S., Gamst, G., & Guarino, A.J. (2013). *Applied multivariate research: Design and interpretation* (2nd ed). California: SAGE Publications.

MI News Network. (2019). *Top 10 largest cruise ships in 2019*. Retrieved from https://www.marineinsight.com/know-more/top-10-largest-cruise-ships-2017/

Morgan, D.L., Ataie, J., Carder, P., & Hoffman, K. (2013). Introducing dyadic interviews as a method for collecting qualitative data. *Qualitative Health Research, 23*(9), 1276-1284. doi:10.1177/1049732313501889

Morgan, D.L., Eliot, S., Lowe, R.A., & Gorman, P. (2016). Dyadic interviews as a tool for qualitative evaluation. *American Journal of Evaluation, 37*(1), 109-117. doi:10.1177/1098214015611244

Morillo, S.G., Luchs, A., Cilli, A. & Timenetsky, M.C.S.T. (2012). Rapid detection of Norovirus in naturally contaminated food: Foodborne gastroenteritis outbreak on a cruise ship in Brazil, 2010. *Food and Environmental Virology, 4*, 124-129. doi:10.1007/s12560-012-9085-x

Mustillo, S. & Kwon, S. (2015). Auxiliary variables in multiple imputation when data are missing not at random. *The Journal of Mathematical Sociology, 39*(2), 73-91. doi:10.1080/0022250X.2013.877898

Nancarrow, C. & Brace, I. (2008). Let's get ethical: Dealing with socially desirable responding online. *Market Research Society Annual Conference 2008*.

Nassiri, V., Lovik, A., Molenberghs, G., & Verbeke, G. (2018). On using multiple imputation for exploratory factor analysis of incomplete data. *Behavior Research Methods, 50*, 501-517. doi:10.3758/s13428-017-1013-4

Neuman, W.L. (2011). *Social research methods: Quantitative and qualitative approaches*. Boston: Allyn and Bacon.

Nguyen, D.T., DeWitt, T., & Russell-Bennett, R. (2012). Service convenience and social servicescape: Retail vs hedonic setting. *Journal of Services Marketing, 26*(4), 265-277. doi:10.1108/08876041211237569

Nguyen, N., & LeBlanc, G. (1998). The mediating role of corporate image on customers' retention decisions: An investigation in financial services. *The International Journal of Bank Marketing, 16*(2), 52-65.

Nguyen-Phuoc, D.Q., Su, D.N., Tran, P.T.K., Le, D-T.T., & Johnson, L.W. (2020). Factors influencing customer's loyalty towards ride-hailing taxi services: A case study of Vietnam. *Transportation Research Part A, 134*, 96-112. doi:10.1016/j.tra.2020.02.008

Nunnally, J.C. (1978). *Psychometric theory*. New York: McGraw-Hill.

Oliver, R.L. (1999). Whence consumer loyalty. *Journal of Marketing, 63*, 33-44.

Oliver, R.L. (2010). *Satisfaction a behavioral perspective on the consumer* (2nd ed). New York: M.E. Sharpe.Inc.

Osborne, J.W. (2014). *Best practices in exploratory factor analysis*. Scotts Valley, CA: CreateSpace Independent Publishing.

Osman, Z., & Sentosa, I. (2013). A study of mediating effect of trust on customer satisfaction and customer loyalty relationship in Malaysian rural tourism. *European Journal of Tourism Research, 6*(2), 192-206.

Ouhna, L., & Mekkaoui, S. (2013). The effect of relationship satisfaction in customer loyalty: Case study of Moroccan agri-food industries. *International Journal of Business and Social Science, 4*(11), 279-286.

Papathanassis, A. (2012). Guest-to-guest interaction on board cruise ships: Exploring social dynamics and the role of situational factors. *Tourism Management, 33*, 1148-1158. doi:10.1016/j.tourman.2011.11.016

Papathanassis, A. (2017). Cruise tourism management: State of the art. *Tourism Review, 72*(1), 104-119. doi:10.1108/TR-01-2017-0003

Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1985). A conceptual model of service quality and its implication for future research. *Journal of Marketing, 49*, 41-50.

Parasuraman, A., Zeithaml, V.A., & Berry, L.L. (1988). SERVQUAL: A multiple-item scale for measuring consumer perceptions of service quality. *Journal of Retailing, 64*(1), 12-40.

Parasuraman, A., Zeithaml, V.A., & Malhotra, A. (2005). E-S-QUAL: A multiple-item scale for assessing electronic service quality. *Journal of Service Research, 7*(3), 213-233. doi:10.1177/1094670504271156

Pearce, P.L., & Lee, U-I. (2005). Developing the travel career approach to tourist motivation. *Journal of Travel Research, 43*, 226-237. doi:10.1177/0047287504272020

Pearson, K. (1896). Mathematical contributions to the theory of evolution. Part 3. Regression, heredity and panmixia. *Philosophical Transactions, A*(187), 253-318.

Peisley, T. (1989). New development in World cruising. *EIU Travel and Tourism Analyst, 7*, 5-19.

Peitzika, E., Chatzi, S., & Kissa, D. (2020). Service quality expectations in the fitness center context: A validation of the expectations component of the SERVQUAL scale in Greece. *Service Marketing Quarterly, 41*(2), 89-104. doi:10.1080/15332969.2020.1742977

Penco, L., Profumo, G., Remondino, M., & Bruzzi, C. (2019). Critical events in the tourism industry: Factor affecting the future intention to take a cruise. *International Journal of Contemporary Hospitality Management, 31*(9), 3547-3566. doi:10.1108/IJCHM-05-2018-0423

Perry, J.L., Nicholls, A.R., Clough, P.J., & Crust, L. (2015). Assessing model fit: Caveats and recommendations for confirmatory factor analysis and exploratory structural equation modeling. *Measurement in Physical Education and Exercise Science, 19*(1), 12-21. doi:10.1080/1091367X.2014.952370

Peručić, D. (2020, April). *Analysis of the world cruise industry*. DIEM: Dubrovnik International Economic Meeting, Dubrovnik, Croatia. https://www-proquest-com.ezproxy.lincoln.ac.nz/conference-papers-proceedings/analysis-world-cruise-industry/docview/2415490358/se-2?accountid=27890

Petrick, J.F. (2004). The roles of quality, value and satisfaction in predicting cruise passengers' behavioural intentions. *Journal of Travel Research, 42*, 397-407. doi:10.1177/0047287504263037

Pollack, B.L. (2009). Linking the hierarchical service quality model to customer satisfaction and loyalty. *Journal of Services Marketing, 23*(1), 42-50. doi:10.1108/08876040910933084

Pons, F., Giroux, M., Mourali, M., & Zins, M. (2016). The relationship between density perceptions and satisfaction in the retail setting: Mediation and moderation effects. *Journal of Business Research, 69*, 1000-1007. doi:10.1016/j.jbusres.2015.09.005

Prebensen, N.K., Woo, E., Chen, J.S., & Uysal, M. (2013). Motivation and involvement as antecedents of the perceived value of the destination experience. *Journal of Travel Research, 52*(2), 253-264. doi:10.1177/0047287512461181

Pritchard, M.P., Havitz, M.E., & Howard, D.R. (1999). Analyzing the commitment-loyalty link in service contexts. *Academy of Marketing Science Journal, 27*(3), 333-348.

Putra, E.D., & Cho, S. (2019). Characteristics of small business leadership from employees' perspective: A qualitative study. *International Journal of Hospitality Management, 78*, 36-46. doi:10.1016/j.ijhm.2018.11.011

Radić, A. (2017). Exploring the building components of on-board cruise experience. *Australian Journal of Maritime and Ocean Affairs*, 1-14. doi:10.1080/18366503.2017.1420327

Radić, A., Björk, P., & Kauppinen-Räisänen, H. (2019). Cruise holidays: How on-board service quality affects passengers' behavior. *Tourism in Marine Environments, 14*(1-2), 45-59. doi:10.3727/154427319X15471581334642

Radic, A., Law, R., Lück, M., Kang, H., Ariza-Montes, A., Arjona-Fuentes, J.M., & Han, H. (2020). Apocalypse now or overreaction to coronavirus: The global cruise tourism industry crisis. *Sustainability, 12*(6968), 1-19. doi:10.3390/su12176968

Radic, A., & Lück, M. (2018). (Don't) blame it on the weather: The impact of weather on cruise tourism service quality perception and satisfaction. *Australian Journal of Maritime & Ocean Affairs, 10*(4), 205-221. doi:10.1080/18366503.2018.1521325

Rauyruen, P. & Miller, K.E. (2007). Relationship quality as a predictor of B2B customer loyalty. *Journal of Business Research, 60*(1), 21-31. doi:10.1016/j.jbusres.2005.11.006

Reichheld, F.F. (1994). Loyalty and the renaissance of marketing. *Marketing Management, 2*(4), 10-21.

Richins, M.L., & Bloch, P.H. (1986). After the new wears off: the temporal context of product involvement. *Journal of Consumer Research, 13*(2), 280-285.

Rim, P.A., & Hun-Koo, H. (2013). Comparative analysis of methodologies to evaluate air cargo carriers' service quality: Focusing on SERVQUAL and SERVPERF. *Journal of International Logistics and Trade, 11*(2), 29-40, 44-46.

Rosenbaum, M.S., & Massiah, C. (2011). An expanded servicescape perspective. *Journal of Service Management, 22*(4), 471-490. doi:10.1108/09564231111155088

Rust, R.T., & Oliver, R.L. (1994). *Service quality: New directions in theory and practice.* California. SAGE Publications.

Saleem, M.A., Zahra, S., & Yaseen, A. (2017). Impact of service quality and trust on repurchase intentions – the case of Pakistan airline industry. *Asia Pacific Journal of Marketing and Logistics, 29*(5), 1136-1159. doi:10.1108/APJML-10-2016-0192

Schumacker, R.E., & Lomax, R.G. (2004). *A beginner's guide to structural equation modeling* (2nd ed). Mahwah, NJ: Lawrence Erlbaum Associates.

Sharkness, J. & DeAngelo, L. (2011). Measuring student involvement: A comparison of classical test theory and item response theory in the construction of scales from student surveys. *Research in Higher Education, 52*(5), 480-507.

Sheehan, P. (2011). *Greed of boomers led us to a total bust*. Retrieved from https://www.smh.com.au/politics/federal/greed-of-boomers-led-us-to-a-total-bust-20110925-1krki.html

Shi, Y., Prentice, C. & He, W. (2014). Linking service quality, customer satisfaction and loyalty in casinos, does membership matter? *International Journal of Hospitality Management, 40*, 81-91. doi:10.1016/j.ijhm.2014.03.013

Singapore Tourism Board. (2014). *Partnering to grow Singapore's fly-cruise segment*. Retrieved from https://www.stb.gov.sg/content/stb/en/media-centre/media-releases/partnering-to-grow-sg-fly-cruise-segment.html

Skaalsvik, H. (2011). Service failures in a cruise line context: Suggesting categorical schemes of service failures. *European Journal of Tourism Research, 4*(1), 25-43.

Skogland, I., & Siguaw, J.A. (2004). Are your satisfied customers loyal? *Cornell Hotel and Restaurant Administration Quarterly, 45*(3), 221-234.

Sörbom, D. (1986). *Model modification* (Research report 86-3). University of Uppsala, Department of Statistics, Uppsala, Sweden.

Spencer, N.H. (2014). *Essentials of multivariate data analysis*. Boca Raton, FL: Taylor & Francis Group.

Spreng, R.A., Dixon, A.L., & Olshavsky, R.W. (1993). The impact of perceived value on consumer satisfaction. *Journal of Consumer Satisfaction, Dissatisfaction and Complaining Behaviour, 6*(1), 50-55.

Stevens, J. (2001). *Applied multivariate statistics for the social sciences* (4th ed.). New Jersey: Lawrence Erlbaum Associates.

Stevens, R.E., Wrenn, B., Sherwood, P.K. & Ruddick, M.E. (2006). *The Marketing Research Guide*(2nd ed). New York: Routledge

Stewart, D.W. (1981). The application and misapplication of factor analysis in marketing research. *Journal of Marketing Research, 18*(1), 51-62.

Su, L., Swanson, S.R., & Chen, X. (2016). The effects of perceived service quality on repurchase intentions and subjective well-being of Chinese tourists: The mediating role of relationship quality. *Tourism Management, 52*, 82-95. doi:10.1016/j.tourman.2015.06.012

Suhartanto, D. (2011). *An examination of brand loyalty in the Indonesian hotel industry* (Doctoral thesis, Lincoln University, 2011). Retrieved from http://hdl.handle.net/10182/3618

Suhartanto, D., Clemes, M., & Dean, D. (2013). Analyzing the complex and dynamic nature of brand loyalty in the hotel industry. *Tourism Review International, 17*, 47-61. doi:10.3727/154427213X13649094288106

Suhartanto, D., Clemes, M., Februadi, A., Suhaeni, T., & Loveldy, Z.A.C. (2020). Modelling passenger loyalty towards app-based motorcycle taxi. *Asian Academy of Management Journal, 25*(1), 43-60. doi:10.21315/aamj2020.25.1.3

Tabachnick, B.G., & Fidell, L.S. (2007). *Using multivariate statistics* (5th ed). Boston: Pearson Education.

Tang, L., Hurst, J., Niehm, L., Fiore, A.M., Dorie, A., & Jablon-Roberts, S. (2020). Reconceptualizing the hierarchical service quality model: The case of agritourism events. *Event Management, 24*, 389-407. doi:10.3727/152599519X15506259856435

TAY, R. (2017). Correlation, variance inflation and multicollinearity in regression model. *Journal of the Eastern Asia Society for Transportation Studies, 12*, 2006-2015. doi:10.11175/easts.12.2006

Tombs, A., & McColl-Kennedy, J.R. (2003). Social-servicescape conceptual model. *Marketing Theory, 3*(4), 447-475. doi:10.1177/1470593103040785

Tourangeau, R. & Yan, T. (2007). Sensitive questions in surveys. *Psychological Bulletin, 133*(5), 859-883. doi:10.1037/0033-2909.133.5.859

Tucker, L.R., & Lewis, C. (1973). A reliability coefficient for maximum likelihood factor analysis. *Psychometrika, 38*, 1-10.

Turley, L.W., & Fugate, D.L. (1992). The multidimensional nature of service facilities. *Journal of Service Marketing, 6*(3), 37-45. doi:10.1108/08876049210035926

U.S. News. (2020). *Symphony of the Seas*. Retrieved from https://travel.usnews.com/cruises/royal-caribbean-international-300/symphony-of-the-seas-1038/

Ullman, J.B. (2007). Structural equation modeling. In B.G. Tabachnick & L.S. Fidell (Eds). *Using multivariate statistics* (5th ed) (pp.676-780). Boston: Pearson Education.

Vieira, E.T.Jr. (2017). *Introduction to real world statistics: With step-by-step SPSS instructions*. New York: Routledge.

Wakefield, K.L., & Blodgett, J.G. (1996). The effect of the servicescape on customers' behavioural intentions in leisure service settings. *Journal of Service Marketing, 10*(6), 45-61. doi:10.1108/08876049610148594

Wang, J., & Wang, X. (2012). *Structural equation modeling: Applications using Mplus*. Chichester, West Sussex: John Wiley & Sons, Higher Education Press.

Ward, D. (1999). *Berlitz 1999 complete guide to cruising and cruise ships.* New Jersey: Berlitz Publishing Company.

Wason, P.C., & Johnson-Laird, P.N. (1972). *Psychology of reasoning: Structure and Content*. Massachusetts: Harvard University Press.

Whyte, L.J. (2018). Eliciting cruise destination attributes using repertory grid analysis. *Journal of Destination Marketing & Management, 10*, 172-180. doi:10.1016/j.jdmm.2018.11.003

Widaman, K.F. (2007). Common factors versus components: Principals and principles, errors and misconceptions. In R. Cudeck & R.C. MacCallum (Eds.), *Factor analysis at 100: Historical developments and future directions* (pp.177-204). Mahwah, New Jersey: Erlbaum.

Wilkins, H., Merrilees, B., & Herington, C. (2007). Towards an understanding of total service quality in hotels. *International Journal of Hospitality Management, 26*, 840-853. doi:10.1016/j.ijhm.2006.07.006

Wilkinson, T.J., Wade, W.B., & Knock, L.D. (2009). A blueprint to assess professionalism: Results of a systematic review. *Academic Medicine, 84*(5), 551-558. doi:10.1097/ACM.0b013e31819fbaa2

Williams, L.J., & O'Boyle, E.H.Jr. (2008). Measurement models for linking latent variables and indicators: A review of human resource management research using parcels. *Human Resource Management Review, 18*, 233-242. doi:10.1016/j.hrmr.2008.07.002

Wind Rose Network. (2017). *The cruise industy: Types of cruise ships.* Retrieved from www.windrosenetwork.com/The-Cruise-Industry-Types-of-Cruise-Ships

Winter, J.K. (2010). Response bias. In N.J. Salkind (Ed.), *Encyclopedia of research design* (pp.1272-1273). Thousand Oaks: SAGE Publications, Inc.

Wirtz, J., & Lovelock, C. (2018). *Essentials of services marketing* (3rd ed). Essex: Pearson Education Limited.

Wondirad, A. (2019). Retracing the past, comprehending the present and contemplating the future of cruise tourism through a meta-analysis of journal publications. *Marine Policy, 108*(103618), 1-14. doi:10.1016/j.marpol.2019.103618

Wong, I.A., & Fong, V.H.I. (2012). Development and validation of the casino service quality scale: CASERV. *International Journal of Hospitality Management, 31*, 2019-217. doi:10.1016/j.ijhm.2011.04.005

Wright, S. (1921). Correlation and causation. *Journal of Agricultural Research, 20*, 557-585.

Wu, H., Lv, X., Cavusoglu, M., & Cobanoglu, C. (2021). Chinese cruise customers loyalty: The impact of customer participation and service personal values. *Tourism Review, 76*(1), 255-276. doi:10.1108/TR-03-2019-0085

Wu, H-C., & Cheng, C-C. (2013). A hierarchical model of service quality in the airline industry. *Journal of Hospitality and Tourism Management, 20*, 13-22. doi:10.1016/j.jhtm.2013.05.001

Wu, H-C., Cheng, C-C., & Ai, C-H. (2018). A study of experiential quality, experiential value, trust, corporate reputation, experiential satisfaction and behavioral intentions for cruise tourists: The case of Hong Kong. *Tourism Management, 66*, 200-220. doi:10.1016/j.tourman.2017.12.011

Wu, H-C., & Hsu, F-S. (2012). A multi-dimensional and hierarchical model of service quality in the gaming industry. *International Journal of Tourism Sciences, 12*(3), 90-118. doi:10.1080/15980634.2012.11434665

Wu, H-C., & Ko, Y.J. (2013). Assessment of service quality in the hotel industry. *Journal of Quality Assurance in Hospitality & Tourism, 14*(3), 218-244. doi:10.1080/1528008X.2013.802557

Wu, H-C., & Mohi, Z. (2015). Assessment of service quality in the fast-food restaurant. *Journal of Foodservice Business Research, 18*(4), 358-388. doi:10.1080/15378020.2015.1068673

Wu, P.C.S., Yeh, G.Y-Y., & Hsiao, C-R. (2011). The effect of store image and service quality on brand image and purchase intention for private label brands. *Australasian Marketing Journal, 19*, 30-30. doi:10.1016/j.ausmj.2010.11.001

Xie, H., Kerstetter, D.L., & Mattila, A.S. (2012). The attributes of a cruise ship that influence the decision making of cruisers and potential cruisers. *International Journal of Hospitality Management, 31*. 152-159. doi:10.1016/j.ijhm.2011.03.007

Yan, J. (2017). *A comprehensive analysis of student loyalty and its determinants in China's higher education sector* (Doctoral thesis, Lincoln University, 2017). Retrieved from http://hdl.handle.net/10182/8618

Yang, K-C., Hsieh, T-C., Li, H., & Yang, C. (2012). Assessing how service quality, airline image and customer value affect the intentions of passengers regarding low cost carriers. *Journal of Air Transport Management, 20*, 52-53. doi:10.1016/j.jairtraman.2011.12.007

Yoo, J., Arnold, T.J., & Frankwick, G.L. (2012). Effects of positive customer-to-customer service interaction. *Journal of Business Research, 65*, 1313-1320. doi:10.1016/j.jbusres.2011.10.028

Yoon, Y., & Cha, K.C. (2020). A qualitative review of cruise service quality: Case studies from Asia. *Sustainability, 12*(8073), 1-24. doi:10.3390/su12198073

Zealandier Tours. (2017). *Akaroa cruise schedule 2017-2018*. Retrieved from https://www.zelandiertours.com/wp-content/uploads/2017/09/Akaroa-Cruise-Ship-Schedule-2017-2018_0.pdf

Zealandier Tours. (2018). *Akaroa cruise schedule 2018-2019*. Retrieved from https://www.zelandiertours.com/wp-content/uploads/2018/09/akaroa-cruiseship-schedule-2018.pdf

Zeithaml, V.A., Berry, L.L., & Parasuraman, A. (1996). The behavioral consequences of service quality. *Journal of Marketing, 60*(2), 31-46.

Zeithaml, V.A., Bitner, M.J., & Gremler, D.D. (2009). *Service marketing: Integrating customer focus across the firm* (5th ed). New York: McGraw-Hill/Irwin.

Zikmund, W.G., Babin, B.J., Carr, J.C., & Griffin, M. (2010). *Business research methods* (8th ed). Mason: South-Western Cengage Learning.

Zimmer, M.R., & Golden, L.L. (1988). Impression of retailing stores: A content analysis of consumer images. *Journal of Retailing, 64*(3), 265-293.

Appendix 1: Questionnaire

Lincoln University
Te Whare Wānaka o Aoraki
CHRISTCHURCH, NEW ZEALAND

Commerce Division
Faculty of Agribusiness and Commerce
PO Box 85084
Lincoln University
Lincoln 7647
Canterbury, New Zealand
www.lincoln.ac.nz

Dear Cruise Passenger,

I am a PhD candidate at Faculty of Agribusiness and Commerce, Lincoln University, New Zealand. My thesis research is on the on-board experiences of cruise passengers. The research findings will contribute to the service marketing literature and will help cruise lines management to understand passenger loyalty and its antecedents. This research has been reviewed and approved by the Lincoln University Human Ethics Committee.

If you are at least 18 years old, I would like to invite you to participate in this survey. This participation is purely **voluntary**. The attached questionnaire is **anonymous** and your personal details are not compulsory. You may decline to answer any question if you wish. The questionnaire takes approximately 15 minutes to complete. If you choose to complete the survey, it will be understood that you have consented to participate in the research project and to the publication of the results of the research. The research results will be published as a part of my PhD thesis.

Please return the completed questionnaire to the surveyor.

I will be pleased to discuss any concerns you have about your participation in the research. I will be contactable on this number (+64) 210431082 or e-mail at Ida.Yulianti@lincolnuni.ac.nz. You may also contact my supervisors, Mr.Michael D Clemes atMichael.Clemes@lincoln.ac.nz and Dr.David Dean at David.Dean@lincoln.ac.nz.

Your assistance will contribute enormously to the success of this research. Every response is important and I appreciate your willingness to help. Thank you very much for your cooperation and assistance.

Best Regards

Ida Yulianti
PhD Candidate
Commerce Division
Lincoln University

A Survey of Cruise Passengers' On-board Experience

This questionnaire is divided into six sections. **Please answer all the questions in each section.**

Sections A to E apply a series of statements concerning your experience on this cruise ship. On a scale of 1 (strongly disagree) to 7 (strongly agree), please **CIRCLE** your responses.

Section A							
	Strongly Disagree						**Strongly Agree**
1. The crew are welcoming.	1	2	3	4	5	6	7
2. The crew are friendly.	1	2	3	4	5	6	7
3. The crew are polite and courteous.	1	2	3	4	5	6	7
4. The crew are patient when interacting with passengers.	1	2	3	4	5	6	7
5. The attitude of the crew demonstrates their willingness to help me.	1	2	3	4	5	6	7
6. The crew responds quickly to address my needs.	1	2	3	4	5	6	7
7. The crew always provide a prompt service.	1	2	3	4	5	6	7
8. The crew use the appropriate body language when they interact with me.	1	2	3	4	5	6	7
9. I receive individual attention from the crew when I have specific needs.	1	2	3	4	5	6	7
10. The crew do whatever is necessary to satisfy my needs.	1	2	3	4	5	6	7
11. The crew display good working skills.	1	2	3	4	5	6	7
12. The crew are knowledgeable when answering my questions.	1	2	3	4	5	6	7
13. The crew are professional and well trained.	1	2	3	4	5	6	7
14. The crew have good communication skills.	1	2	3	4	5	6	7
15. When I have a problem, the crew shows a sincere interest in solving it.	1	2	3	4	5	6	7
16. The crew understand the importance of resolving my problems.	1	2	3	4	5	6	7
17. The crew try to handle my complaints directly and immediately.	1	2	3	4	5	6	7
18. This cruise ship has an effective service recovery system for resolving complaints.	1	2	3	4	5	6	7
19. The crew deliver superior services.	1	2	3	4	5	6	7
20. The interaction I have with the crew is excellent.	1	2	3	4	5	6	7
21. I feel good about the interaction I have with the crew.	1	2	3	4	5	6	7

Section B							
	Strongly Disagree						**Strongly Agree**
1. The cabin on this cruise ship is clean.	1	2	3	4	5	6	7
2. The bathroom and toilet in the cabin are clean.	1	2	3	4	5	6	7
3. The bed, mattress and pillow in the cabin are comfortable.	1	2	3	4	5	6	7
4. This cruise ship provides a variety of up-to-date entertainment equipment in the entertainment spaces (e.g. casino, night clubs, bars/lounges).	1	2	3	4	5	6	7
5. The equipment of entertainment spaces on this cruise ship is in good condition.	1	2	3	4	5	6	7
6. This cruise ship provides enjoyable parties and performances.	1	2	3	4	5	6	7
7. This cruise ship has adequate recreation and sport facilities that I require (e.g. wall climbing, run/walking track, and miniature golf).	1	2	3	4	5	6	7
8. This cruise ship has adequate fitness and health facilities that I require (e.g. spa, fitness centre, and swimming pool).	1	2	3	4	5	6	7
9. The equipment of recreation centre and fitness centre on this cruise ship is in good condition.	1	2	3	4	5	6	7
10. The restaurants and bars on this cruise ship are clean.	1	2	3	4	5	6	7
11. The dining table and seats of restaurants and bars on this cruise ship are comfortable.	1	2	3	4	5	6	7
12. The quality of tableware in the restaurants and bars on this cruise ship is good.	1	2	3	4	5	6	7
13. There are ample fire alarms on this cruise ship.	1	2	3	4	5	6	7
14. The lifejackets are available in my cabin on this cruise ship.	1	2	3	4	5	6	7
15. There are trained security personnel on this cruise ship.	1	2	3	4	5	6	7
16. There is a secure safe available on this cruise ship.	1	2	3	4	5	6	7
17. I feel comfortable in the physical environment of this cruise ship.	1	2	3	4	5	6	7
18. The physical environment of this cruise ship is excellent.	1	2	3	4	5	6	7
19. I am impressed with the quality of physical environment on this cruise ship.	1	2	3	4	5	6	7

Section C							
	Strongly Disagree						**Strongly Agree**
1. My stay on this cruise ship is an enjoyable experience.	1	2	3	4	5	6	7
2. I have fun experience with my friends/family when I stay on this cruise ship.	1	2	3	4	5	6	7
3. I feel there is romantic environment on this cruise ship.	1	2	3	4	5	6	7
4. This cruise ship serves a variety of food and beverages.	1	2	3	4	5	6	7
5. This cruise ship serves attractive and tempting food and beverages.	1	2	3	4	5	6	7
6. The quality of food and beverage on this cruise ship is excellent.	1	2	3	4	5	6	7
7. When I am on this cruise ship, I can escape from the pressures of daily life.	1	2	3	4	5	6	7
8. My stay on this cruise ship is leisurely and stress-free.	1	2	3	4	5	6	7
9. Staying on this cruise ship is relaxing.	1	2	3	4	5	6	7
10. I believe taking a holiday on this cruise ship is worthwhile.	1	2	3	4	5	6	7
11. I generally feel good about my cruise ship experience.	1	2	3	4	5	6	7
12. Overall, I have received the desired outcome by choosing this cruise ship.	1	2	3	4	5	6	7

Section D							
	Strongly Disagree						**Strongly Agree**
1. I tend to relax easily with the crew.	1	2	3	4	5	6	7
2. I feel very comfortable in the presence of the crew.	1	2	3	4	5	6	7
3. I feel as though I am well regarded by the crew.	1	2	3	4	5	6	7
4. The crew makes me feel important.	1	2	3	4	5	6	7
5. I have developed friendships with other passengers that I met on this cruise ship.	1	2	3	4	5	6	7
6. I enjoy spending time with other passengers on this cruise ship.	1	2	3	4	5	6	7
7. The other passengers on this cruise ship make my stay more enjoyable.	1	2	3	4	5	6	7
8. The public spaces around the pool are not over crowded.	1	2	3	4	5	6	7
9. The public spaces around the decks on this cruise ship are not over crowded.	1	2	3	4	5	6	7
10. The number of people on this cruise ship is about right.	1	2	3	4	5	6	7
11. This cruise ship is not over crowded.	1	2	3	4	5	6	7
12. I am pleased with my social interaction with the crew.	1	2	3	4	5	6	7
13. I am pleased with my social interaction with other passengers.	1	2	3	4	5	6	7
14. There is enough space on this cruise ship for fun and relaxation	1	2	3	4	5	6	7

Section E							
	Strongly Disagree						**Strongly Agree**
1. The services provided by this cruise ship are of a high standard.	1	2	3	4	5	6	7
2. The overall services provided by this cruise ship are excellent.	1	2	3	4	5	6	7
3. The cruise ship delivers superior services in every way.	1	2	3	4	5	6	7
4. Overall, I am pleased with this cruise ship's service quality.	1	2	3	4	5	6	7
5. This cruise line has a good reputation.	1	2	3	4	5	6	7
6. This cruise line has a better image than its competitors.	1	2	3	4	5	6	7
7. In my opinion, this cruise line has a good image in the minds of its passengers.	1	2	3	4	5	6	7
8. In general, I believe that this cruise line always fulfils the promises it makes to passengers.	1	2	3	4	5	6	7
9. Overall, I have a good impression of this cruise line.	1	2	3	4	5	6	7
10. I made the right choice by taking a holiday on this cruise ship.	1	2	3	4	5	6	7
11. I feel delighted with the services delivered by this cruise ship.	1	2	3	4	5	6	7
12. My holiday experience on this cruise ship has satisfied my needs and wants.	1	2	3	4	5	6	7
13. Overall, taking holiday on this cruise ship is a satisfying experience.	1	2	3	4	5	6	7
14. I will say positive things about this cruise ship to other people.	1	2	3	4	5	6	7
15. I will recommend this cruise ship to my friends and colleagues who seek my advice about taking a cruise ship holiday.	1	2	3	4	5	6	7
16. I intend to take another cruise package holiday offered by this cruise ship in the future.	1	2	3	4	5	6	7
17. I will consider this cruise ship as my primary choice of cruise ship.	1	2	3	4	5	6	7
18. There are a variety of activities for me to participate in on this cruise ship.	1	2	3	4	5	6	7
19. The activities that I can participate on this cruise ship are interesting.	1	2	3	4	5	6	7
20. I can freely participate in various activities on this cruise ship.	1	2	3	4	5	6	7

Section F – Demographic Profile

All your response in this section will be kept strictly confidential. Please answer **All Questions**. Please choose **One answer** only, by ticking (✓) where appropriate, or fill-in the information required.

What is your gender?	☐ Male ☐ Female
What is your age group?	☐ 18 – 25 ☐ 26 – 35 ☐ 36 – 45 ☐ 46 – 55 ☐ 56 – 65 ☐ 65+
What is your highest education level?	☐ High School ☐ Diploma Degree ☐ Bachelor Degree ☐ Master Degree ☐ PhD Degree ☐ Other.....
What is your occupation?	☐ Student ☐ Government Officer ☐ Professional ☐ Retired ☐ Business Owner ☐ Housewife ☐ Other (Please specify) …….
What is your nationality?	☐ New Zealand ☐ Australia ☐ USA ☐ Canada ☐ British ☐ Other.....
What is your annual household income in New Zealand Dollar (NZD) approximately?	NZ$.....
Is it your first cruise ship holiday?	☐ Yes ☐ No

Thank you very much for your time. Please return the survey to the surveyor. Wishing you a very good day.

Appendix 2: Items References

a) Questionnaire Items for Measuring Interaction Quality

Constructs	Item Number	Description	Source
Attitude	Att1	The crew are welcoming.	Channoi et al. (2018); Clemes et al. (2014)
	Att2	The crew are friendly.	
	Att3	The crew are polite and courteous.	
	Att4	The crew are patient when interacting with passengers.	
	Att5	The attitude of the crew demonstrates their willingness to help me.	
Behaviour	Bev1	The crew responds quickly to address my needs.	Channoi et al. (2018); Clemes et al. (2014); Pollack (2009)
	Bev2	The crew always provide a prompt service.	
	Bev3	The crew use the appropriate body language when they interact with me.	
	Bev4	I receive individual attention from the crew when I have specific needs.	
	Bev5	The crew do whatever is necessary to satisfy my needs.	
Expertise	Expert1	The crew display good working skills.	Channoi et al. (2018); Clemes et al. (2011b); Clemes et al. (2014)
	Expert2	The crew are knowledgeable when answering my questions.	
	Expert3	The crew are professional and well trained.	
	Expert4	The crew have good communication skills.	
Problem solving	Solve1	When I have a problem, the crew shows a sincere interest in solving it.	Caro and García (2007); Wu and Cheng (2013); Wu and Hsu (2012); Wu and Ko (2013)
	Solve2	The crew understand the importance of resolving my problems.	
	Solve3	The crew try to handle my complaints directly and immediately.	
	Solve4	This cruise ship has an effective service recovery system for resolving complaints.	
Interaction quality	IQ1	The crew deliver superior services.	Clemes et al. (2014); Dagger et al. (2007)
	IQ2	The interaction I have with the crew is excellent.	
	IQ3	I feel good about the interaction I have with the crew.	

b) Questionnaire Items for Measuring Physical Environment Quality

Constructs	Item Number	Description	Source
Room facilities	Room1	The cabin on this cruise ship is clean.	Clemes et al. (2011b); Wu and Ko (2013)
	Room2	The bathroom and toilet in the cabin are clean.	
	Room3	The bed, mattress and pillow in the cabin are comfortable.	
Entertainment facilities	Enter1	This cruise ship provides a variety of up-to-date entertainment equipment in the entertainment spaces (e.g. casino, night clubs, bars/lounges).	Wu and Hsu (2012); Xie et al. (2012)
	Enter2	The equipment of entertainment spaces on this	

	Enter3	cruise ship is in good condition. This cruise ship provides enjoyable parties and performances.	
Recreation, sport, fitness and health facilities	Recre1 Recre2 Recre3	This cruise ship has adequate recreation and sport facilities that I require (e.g. wall climbing, run/walking track, and miniature golf). This cruise ship has adequate fitness and health facilities that I require (e.g. spa, fitness centre, and swimming pool). The equipment of recreation centre and fitness centre on this cruise ship is in good condition.	Channoi et al. (2018); Xie et al. (2012)
Dining and bar facilities	Dine1 Dine2 Dine3	The restaurants and bars on this cruise ship are clean. The dining table and seats of restaurants and bars on this cruise ship are comfortable. The quality of tableware in the restaurants and bars on this cruise ship is good.	Clemes et al. (2018)
Safety and security	Safe1 Safe2 Safe3 Safe4	There are ample fire alarms on this cruise ship. The lifejackets are available in my cabin on this cruise ship. There are trained security personnel on this cruise ship. There is a secure safe available on this cruise ship.	Clemes et al. (2011b); Wu and Cheng (2013); Wu and Hsu (2012)
Physical environment quality	PEQ1 PEQ2 PEQ3	I feel comfortable in the physical environment of this cruise ship. The physical environment of this cruise ship is excellent. I am impressed with the quality of physical environment on this cruise ship.	Clemes et al. (2014); Dagger et al. (2007);

c) Questionnaire Items for Measuring Outcome Quality

Constructs	**Item Number**	**Description**	**Source**
Enjoyable time	Enjoy1 Enjoy2 Enjoy3	My stay on this cruise ship is an enjoyable experience. I have fun experience with my friends/family when I stay on this cruise ship. I feel there is romantic environment on this cruise ship.	Channoi et al. (2018); Krieger et al. (2005); Kwortnik (2008); Mancini (2004)
High quality food	Food1 Food2 Food3	This cruise ship serves a variety of food and beverages. This cruise ship serves attractive and tempting food and beverages. The quality of food and beverage on this cruise ship is excellent.	Clemes et al. (2018); Wu and Hsu (2012)
Carefree on-board experience	Carefree1 Carefree2	When I am on this cruise ship, I can escape from the pressures of daily life. My stay on this cruise ship is leisurely and stress-free.	Channoi et al. (2018); Howat and Assaker (2016); Krieger et al. (2005)

	Carefree3	Staying on this cruise ship is relaxing.	
Outcome quality	OQ1 OQ2 OQ3	I believe taking a holiday on this cruise ship is worthwhile. I generally feel good about my cruise ship experience. Overall, I have received the desired outcome by choosing this cruise ship.	Channoi et al. (2018); Dagger et al. (2007)

d) Questionnaire Items for Measuring Social Factors

Constructs	Item Number	Description	Source
Social interactions with crew	Crew1 Crew2 Crew3 Crew4	I tend to relax easily with the crew. I feel very comfortable in the presence of the crew. I feel as though I am well regarded by the crew. The crew makes me feel important.	Butcher (2005)
Social interactions with other passengers	Pass1 Pass2 Pass3	I have developed friendships with other passengers that I met on this cruise ship. I enjoy spending time with other passengers on this cruise ship. The other passengers on this cruise ship make my stay more enjoyable.	Yoo, Arnold and Frankwick (2012)
Social density	Density1 Density2 Density3 Density4	The public spaces around the pool are not over crowded. The public spaces around the decks on this cruise ship are not over crowded. The number of people on this cruise ship is about right. This cruise ship is not over crowded.	Kyle, Graefe, Manning and Bacon (2004); Tombs and McColl-Kennedy (2003)
Social factors	SF1 SF2 SF3	I am pleased with my social interaction with the crew. I am pleased with my social interaction with other passengers. There is enough space on this cruise ship for fun and relaxation.	Channoi et al. (2018); Kwortnik (2008); Tombs and McColl-Kennedy (2003)

e) Questionnaire Items for Measuring Cruise Service Quality, Cruise Line Image, Passenger Satisfaction, Passenger Loyalty, and Passenger Participation

Constructs	Item Number	Description	Source
Cruise service quality	SQ1 SQ2 SQ3 SQ4	The services provided by this cruise ship are of a high standard. The overall services provided by this cruise ship are excellent. The cruise ship delivers superior services in every way. Overall, I am pleased with this cruise ship's	Channoi et al. (2018); Clemes et al (2011b); Clemes et al (2014); Dagger et al (2007)

		service quality.	
Cruise line image	Image1 Image2 Image3 Image4 Image5	This cruise line has a good reputation. This cruise line has a better image than its competitors. In my opinion, this cruise line has a good image in the minds of its passengers. In general, I believe that this cruise line always fulfils the promises it makes to passengers. Overall, I have a good impression of this cruise line.	Clemes et al. (2007); Hapsari et al. (2017); Suhartanto (2011)
Passenger satisfaction	Satisfy1 Satisfy2 Satisfy3 Satisfy4	I made the right choice by taking a holiday on this cruise ship. I feel delighted with the services delivered by this cruise ship. My holiday experience on this cruise ship has satisfied my needs and wants. Overall, taking holiday on this cruise ship is a satisfying experience.	Bakar et al. (2017); Clemes et al. (2007); Clemes et al. (2011b)
Passenger loyalty	Loyal1 Loyal2 Loyal3 Loyal4	I will say positive things about this cruise ship to other people. I will recommend this cruise ship to my friends and colleagues who seek my advice about taking a cruise ship holiday. I intend to take another cruise package holiday offered by this cruise ship in the future. I will consider this cruise ship as my primary choice of cruise ship.	Forgas-Coll et al. (2014); Hapsari et al. (2017)
Passenger participation	Participate1 Participate2 Participate3	There are a variety of activities for me to participate in on this cruise ship. The activities that I can participate on this cruise ship are interesting. I can freely participate in various activities on this cruise ship.	Lu et al. (2015)

Appendix 3: The List of Medium, Large and Mega Cruise Ships

a) The list of medium, large and mega cruise ships that visited Akaroa, New Zealand on 2017/2018 cruise season

No	Name of Cruise Ship	Date	Passenger Capacity
1.	Golden Princess	7 October 2017	2624
2.	Noordam	31 October 2017	1918
3.	Celebrity Solstice	6 November 2017	2850
4.	Voyager of the Seas	8 November 2017	3114
5.	Noordam	11 November 2017	1918
6.	Radiance of the Seas	12 November 2017	2146
7.	Celebrity Solstice	16 November 2017	2850
8.	Golden Princess	20 November 2017	2624
9.	Radiance of the Seas	23 November 2017	2146
10.	Noordam	30 November 2017	1918
11.	Sun Princess	1 December 2017	1950
12.	Celebrity Solstice	4 December 2017	2850
13.	Norwegian Jewel	7 December 2017	2376
14.	Radiance of the Seas	8 December 2017	2146
15.	Sea Princess	9 December 2017	2016
16.	Regatta	10 December 2017	684
17.	Noordam	11 December 2017	1918
18.	Celebrity Solstice	14 December 2017	2850
19.	Sun Princess	14 December 2017	1950
20.	Diamond Princess	26 December 2017	2674
21.	Sea Princess	27 December 2017	2016
22.	Radiance of the Seas	27 December 2017	2146
23.	Celebrity Solstice	28 December 2017	2850
24.	Golden Princess	29 December 2017	2624
25.	Maasdam	31 December 2017	1258
26.	Diamond Princess	4 January 2018	2674
27.	Sun Princess	9 January 2018	1950
28.	Maasdam	9 January 2018	1258
29.	Noordam	10 January 2018	1918
30.	Sea Princess	10 January 2018	2016
31.	Seabourn Encore	11 January 2018	604
32.	Norwegian Jewel	12 January 2018	2376
33.	Golden Princess	15 January 2018	2624
34.	Radiance of the Seas	22 January 2018	2146
35.	Sun Princess	22 January 2018	1950
36.	Maasdam	26 January 2018	1258
37.	Sea Princess	27 January 2018	2016
38.	Celebrity Solstice	29 January 2018	2850
39.	Diamond Princess	1 February 2018	2674
40.	Golden Princess	3 February 2018	2624
41.	Radiance of the Seas	5 February 2018	2164

42.	Norwegian Jewel	5 February 2018	2376
43.	Regatta	9 February 2018	684
44.	Pacific Jewel	10 February 2018	1950
45.	Celebrity Solstice	12 February 2018	2850
46.	Seabourn Encore	12 February 2018	604
47.	Noordam	13 February 2018	1918
48.	Diamond Princess	15 February 2018	2674
49.	Golden Princess	16 February 2018	2624
50.	Azamara Journey	17 February 2018	694
51.	Sea Princess	17 February 2018	2016
52.	Diamond Princess	21 February 2018	2674
53.	Noordam	22 February 2018	1918
54.	Sun Princess	24 February 2018	1950
55.	Carnival Legend	26 February 2018	2124
56.	Azamara Journey	28 February 2018	694
57.	Queen Mary 2	1 March 2018	2620
58.	Seven Seas Voyager	1 March 2018	708
59.	Noordam	6 March 2018	1918
60.	Sun Princess	9 March 2018	1950
61.	Radiance of the Seas	13 March 2018	2164
62.	Celebrity Solstice	16 March 2018	2850
63.	Diamond Princess	17 March 2018	2674
64.	Sun Princess	22 March 2018	1950
65.	Radiance of the Seas	23 March 2018	2164
66.	Pacific Jewel	25 March 2018	1950
67.	Noordam	4 April 2018	1918
68.	Sun Princess	4 April 2018	1950
69.	Radiance of the Seas	12 April 2018	2164

Source: Zealandier Tours (2017)

b) The list of medium, large and mega cruise ships that visited Akaroa, New Zealand on 2018/2019 cruise season

No	Name of Cruise Ship	Date	Passenger Capacity
1.	Majestic Princess	2 October 2018	3560
2.	Golden Princess	17 October 2018	2600
3.	Majestic Princess	19 October 2018	3560
4.	Majestic Princess	27 October 2018	3560
5.	Sea Princess	2 November 2018	2000
6.	Noordam	3 November 2018	1916
7.	Majestic Princess	10 November 2018	3560
8.	Noordam	13 November 2018	1916
9.	Golden Princess	13 November 2018	2600
10.	Celebrity Solstice	15 November 2018	2852
11.	Carnival Legend	18 November 2018	2124
12.	Golden Princess	26 November 2018	2600
13.	Radiance of the Seas	26 November 2018	2501

14.	Celebrity Solstice	27 November 2018	2852
15.	Sun Princess	28 November 2018	2000
16.	Majestic Princess	1 December 2018	3560
17.	Sea Princess	1 December 2018	2000
18.	Pacific Explorer	2 December 2018	1998
19.	Maasdam	3 December 2018	1258
20.	Radiance of the Seas	6 December 2018	2501
21.	Celebrity Solstice	7 December 2018	2852
22.	Norwegian Jewel	8 December 2018	2376
23.	Golden Princess	9 December 2018	2600
24.	Sun Princess	11 December 2018	2000
25.	Majestic Princess	15 December 2018	3560
26.	Maasdam	16 December 2018	1258
27.	Radiance of the Seas	16 December 2018	2501
28.	Celebrity Solstice	18 December 2018	2852
29.	Majestic Princess	21 December 2018	3560
30.	Golden Princess	27 December 2018	2600
31.	Celebrity Solstice	28 December 2018	2852
32.	Norwegian Jewel	29 December 2018	2376
33.	Seabourn Encore	31 December 2018	604
34.	Pacific Jewel	1 January 2019	1950
35.	Sea Princess	2 January 2019	2000
36.	Majestic Princess	4 January 2019	3560
37.	Radiance of the Seas	7 January 2019	2501
38.	Celebrity Solstice	12 January 2019	2852
39.	Azamara Quest	14 January 2019	686
40.	Golden Princess	15 January 2019	2600
41.	Silver Muse	15 January 2019	596
42.	Seabourn Encore	16 January 2019	604
43.	Sun Princess	17 January 2019	2000
44.	Radiance of the Seas	19 January 2019	2501
45.	Majestic Princess	20 January 2019	3560
46.	Celebrity Solstice	23 January 2019	2852
47.	Norwegian Jewel	25 January 2019	2376
48.	Regatta	25 January 2019	684
49.	Sea Princess	26 January 2019	2000
50.	Seabourn Encore	27 January 2019	604
51.	Radiance of the Seas	29 January 2019	2501
52.	Azamara Quest	31 January 2019	686
53.	Majestic Princess	1 February 2019	3560
54.	Norwegian Jewel	4 February 2019	2376
55.	Noordam	7 February 2019	1916
56.	Celebrity Solstice	7 February 2019	2582
57.	Radiance of the Seas	8 February 2019	2501
58.	Sun Princess	10 February 2019	2000
59.	Carnival Legend	11 February 2019	2124
60.	Regatta	11 February 2019	684

61.	Majestic Princess	13 February 2019	3560
62.	Noordam	15 February 2019	1916
63.	Azamara Quest	16 February 2019	686
64.	Golden Princess	17 February 2019	2600
65.	Seabourn Encore	17 February 2019	604
66.	Radiance of the Seas	18 February 2019	2501
67.	Columbus	19 February 2019	1400
68.	Regatta	20 February 2019	684
69.	Queen Elizabeth	25 February 2019	2068
70.	Majestic Princess	27 February 2019	3560
71.	Radiance of the Seas	28 February 2019	2501
72.	Sea Princess	2 March 2019	2000
73.	Amadea	4 March 2019	624
74.	Seabourn Encore	4 March 2019	604
75.	Noordam	5 March 2019	1916
76.	Golden Princess	5 March 2019	2600
77.	Majestic Princess	6 March 2019	3560
78.	Pacific Jewel	10 March 2019	1950
79.	Noordam	14 March 2019	1916
80.	Golden Princess	15 March 2019	2600
81.	Seabourn Encore	16 March 2019	604
82.	Majestic Princess	18 March 2019	3560
83.	Queen Elizabeth	25 March 2019	2068
84.	Golden Princess	28 March 2019	2600
85.	Crystal Symphony	29 March 2019	922
86.	Radiance of the Seas	30 March 2019	2501
87.	Celebrity Solstice	3 April 2019	2852
88.	Noordam	12 April 2019	1916
89.	Golden Princess	13 April 2019	2600

Source: Zealandier Tours (2018)

c) The list of medium, large and mega cruise ships that visited Benoa, Indonesia on 2018

No	Name of Cruise Ship	Date	Passenger Capacity
1.	Sapphire Princess	2 January 2018	2670
2.	AIDAcara	3 January 2018	1186
3.	Oceania Regatta	4 January 2018	684
4.	ms Volendam	11 January 2018	1432
5.	Azamara Journey	19 January 2018	694
6.	Seven Seas Voyager	7 February 2018	700
7.	Sapphire Princess	11 February 2018	2670
8.	ms Volendam	22 February 2018	1432
9.	Viking Sun	23 February 2018	930
10.	Radiance of the Seas	24 February 2018	2501
11.	ms Amsterdam	26 February 2018	1380
12.	Oceania Regatta	27 February 2018	684
13.	Sapphire Princess	28 February 2018	2670

14.	Norwegian Jewel	5 March 2018	2376
15.	Seabourn Encore	12 March 2018	604
16.	Costa Luminosa	16 March 2018	2260
17.	Queen Mary 2	20 March 2018	2695
18.	Azamara Journey	21 March 2018	694
19.	Seven Seas Voyager	23 March 2018	700
20.	Golden Princess	26 March 2018	2600
21.	Oceania Insignia	26 April 2018	684
22.	Carnival Spirit	13 May 2018	2124
23.	Sun Princess	17 May 2018	2010
24.	Sun Princess	4 June 2018	2010
25.	Carnival Spirit	12 June 2018	2124
26.	Sun Princess	14 October 2018	2010
27.	ms Amsterdam	15 November 2018	1380
28.	Norwegian Jewel	16 November 2018	2376
29.	Viking Orion	29 November 2018	930
30.	Sapphire Princess	1 December 2018	2670
31.	Seabourn Encore	3 December 2018	604
32.	Azamara Quest	11 December 2018	710
33.	Silver Muse	20 December 2018	596
34.	AIDAvita	23 December 2018	1266
35.	Oceania Regatta	27 December 2018	684
36.	Seven Seas Mariner	31 December 2018	700

Source: CrewCenter (2017)

d) The list of medium, large and mega cruise ships that visited Benoa, Indonesia on 2019

No	Name of Cruise Ship	Date	Passenger Capacity
1.	Diamond Princess	1 January 2019	2670
2.	Astor	19 January 2019	650
3.	ms Europa 2	19 January 2019	516
4.	ms Maasdam	21 January 2019	1258
5.	Seven Seas Mariner	3 February 2019	700
6.	Amadea	6 February 2019	624
7.	AIDAvita	12 February 2019	1266
8.	Norwegian Jewel	27 February 2019	2376
9.	Sapphire Princess	3 March 2019	2670
10.	Silver Muse	8 March 2019	596
11.	Queen Victoria	11 March 2019	2081
12.	Oceania Insignia	16 March 2019	684
13.	ms Amsterdam	18 March 2019	1380
14.	Costa Luminosa	21 March 2019	2260
15.	Pacific Eden	25 March 2019	1258
16.	Viking Orion	26 March 2019	930
17.	ms Europa 2	7 April 2019	516
18.	Seabourn Encore	12 April 2019	604
19.	Crystal Symphony	22 April 2019	848

20.	Pacific Dawn	10 August 2019	1546
21.	Pacific Dawn	28 August 2019	1546
22.	Silver Muse	22 November 2019	596
23.	Sun Princess	23 November 2019	2010
24.	AIDAvita	26 November 2019	1266
25.	Carnival Splendor	28 November 2019	3012
26.	Seabourn Encore	4 December 2019	604
27.	AIDAvita	6 December 2019	1266
28.	Boudicca	10 December 2019	900
29.	Viking Orion	10 December 2019	930
30.	Sapphire Princess	14 December 2019	2670
31.	Sun Princess	19 December 2019	2010
32.	Seven Seas Voyager	25 December 2019	700
33.	Sapphire Princess	31 December 2019	2670

Source: CrewCenter (2018)

Appendix 4: Normality

a) Normality of EFA Dataset after Data Transformation

Items	Skewness	Kurtosis
Att1	-1.364	0.860
Att2	-1.444	1.146
Att3	-1.291	0.694
Att4	-2.000	6.655
Att5	-1.186	0.364
Bev1	-1.785	4.929
Bev2	-1.661	4.630
Bev3	-1.451	2.030
Bev4	-1.810	4.958
Bev5	-1.762	6.272
Expert1	-0.776	-0.525
Expert2	-1.413	2.643
Expert3	-1.734	4.121
Expert4	-1.048	1.066
Solve1	-1.743	5.248
Solve2	-1.689	4.915
Solve3	-1.694	4.693
Solve4	-1.057	0.565
Room1	-1.751	2.327
Room2	-1.766	2.717
Room3	-1.477	1.308
Enter1	-1.441	2.421
Enter2	-1.595	3.504
Enter3	-1.020	0.626
Recre1	-1.070	1.152
Recre2	-1.437	2.501
Recre3	-1.407	2.377
Dine1	-1.434	1.250
Dine2	-1.325	0.835
Dine3	-1.105	0.200
Safe1	-1.266	0.611
Safe2	-2.599	5.521
Safe3	-1.699	1.986
Safe4	-2.367	4.184
Enjoy1	-2.092	6.704
Enjoy2	-1.702	3.557
Enjoy3	-0.876	1.227
Food1	-2.063	5.677
Food2	-1.678	3.037
Food3	-1.432	1.948
Carefree1	-2.185	6.132
Carefree2	-1.814	5.034
Carefree3	-2.068	6.534
Crew1	-1.413	2.870
Crew2	-1.204	1.181
Crew3	-1.464	2.550
Crew4	-1.459	2.307
Pass1	-1.389	2.136
Pass2	-1.344	1.642
Pass3	-0.974	0.209
Density1	-1.138	1.080
Density2	-1.414	2.272
Density3	-1.665	2.947
Density4	-1.832	3.486

b) Normality of SEM Dataset after Data Transformation

Items	Skewness	Kurtosis
P1	-2.246	7.027
P2	-2.426	8.007
P3	-2.238	7.130
P4	-2.449	8.085
P5	-1.410	2.524
P6	-2.210	5.653
P7	-1.430	3.036
P8	-2.031	6.041
P9	-2.099	5.950
P10	-2.092	5.363
P11	-1.523	2.378
At1	-1.442	1.160
At2	-1.576	1.654
At3	-1.583	1.605
At4	-1.133	0.302
At5	-1.303	0.547
IQ1	-1.944	5.112
IQ2	-1.416	1.161
IQ3	-1.358	0.964
ER1	-1.640	3.523
ER2	-1.745	3.473
ER3	-1.390	2.205
ER4	-1.296	2.027
ER5	-1.465	2.196
ER6	-1.603	3.686
RD1	-1.953	3.395
RD2	-2.034	3.429
RD3	-1.217	0.655
RD4	-1.669	2.525
RD5	-1.180	0.565
RD6	-1.223	1.018
S1	-1.265	0.790
S2	-2.566	6.977
S3	-2.115	3.700
S4	-2.393	4.418
PEQ1	-1.949	3.593
PEQ2	-1.409	1.169
PEQ3	-1.161	0.379
F1	-1.997	4.955
F2	-1.929	4.477
F3	-1.657	3.064
C1	-1.740	2.287
C2	-1.591	1.678
C3	-1.629	2.126
OQ1	-1.759	2.360
OQ2	-1.559	1.742
OQ3	-1.421	1.084
D1	-1.509	2.268
D2	-1.835	3.687
D3	-2.114	5.178
D4	-2.256	6.022
Cr1	-2.242	6.967
Cr2	-1.237	0.489
Cr3	-2.210	7.702
Cr4	-2.058	6.387
Ps1	-2.106	5.542
Ps2	-2.022	5.471
Ps3	-1.986	4.925
SF1	-1.974	5.799

SF2	-2.030	6.236
SF3	-2.449	7.069
SQ1	-2.025	5.717
SQ2	-1.998	5.348
SQ3	-1.746	4.075
SQ4	-2.331	6.790
Image1	-2.100	5.675
Image2	-1.500	2.824
Image3	-1.708	3.787
Image4	-1.537	2.438
Image5	-2.011	4.426
Satisfy1	-2.525	6.976
Satisfy2	-2.115	5.240
Satisfy3	-2.251	5.879
Satisfy4	-2.257	5.742
Loyal1	-2.409	6.403
Loyal2	-2.222	5.105
Loyal3	-1.639	2.080
Loyal4	-1.186	0.450
Participate1	-1.729	3.271
Participate2	-1.537	2.684
Participate3	-1.922	4.685

Appendix 5: Exploratory Factor Analysis for Interaction Quality

5.A. Correlation matrix (interaction quality)

	Att1	Att2	Att3	Att4	Att5	Bev1	Bev4	Bev5	Expert1	Expert2	Expert3	Expert4	Solve1	Solve2	Solve3	Solve4
Att1	1.000	.834	.828	.734	.681	.595	.630	.594	.645	.495	.624	.466	.608	.628	.621	.547
Att2	.834	1.000	.887	.716	.697	.672	.643	.611	.637	.525	.636	.502	.686	.665	.665	.549
Att3	.828	.887	1.000	.760	.750	.642	.631	.620	.652	.536	.658	.493	.673	.638	.624	.504
Att4	.734	.716	.760	1.000	.792	.708	.617	.646	.591	.491	.648	.469	.661	.622	.666	.589
Att5	.681	.697	.750	.792	1.000	.646	.594	.649	.592	.449	.593	.470	.647	.603	.622	.564
Bev1	.595	.672	.642	.708	.646	1.000	.673	.692	.612	.547	.623	.487	.727	.703	.741	.594
Bev4	.630	.643	.631	.617	.594	.673	1.000	.722	.578	.552	.638	.463	.674	.651	.700	.544
Bev5	.594	.611	.620	.646	.649	.692	.722	1.000	.654	.528	.593	.525	.783	.752	.763	.593
Expert1	.645	.637	.652	.591	.592	.612	.578	.654	1.000	.593	.673	.533	.667	.615	.643	.518
Expert2	.495	.525	.536	.491	.449	.547	.552	.528	.593	1.000	.758	.635	.637	.578	.632	.524
Expert3	.624	.636	.658	.648	.593	.623	.638	.593	.673	.758	1.000	.652	.658	.644	.690	.570
Expert4	.466	.502	.493	.469	.470	.487	.463	.525	.533	.635	.652	1.000	.566	.594	.607	.477
Solve1	.608	.686	.673	.661	.647	.727	.674	.783	.667	.637	.658	.566	1.000	.863	.780	.604
Solve2	.628	.665	.638	.622	.603	.703	.651	.752	.615	.578	.644	.594	.863	1.000	.802	.594
Solve3	.621	.665	.624	.666	.622	.741	.700	.763	.643	.632	.690	.607	.780	.802	1.000	.697
Solve4	.547	.549	.504	.589	.564	.594	.544	.593	.518	.524	.570	.477	.604	.594	.697	1.000

5.B. KMO and Bartlett's test (interaction quality)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.951
Bartlett's Test of Sphericity	Approx. Chi-Square	4191.941
	df	120
	Sig.	.000

5.C. Anti-image correlation matrix (interaction quality)

	Att1	Att2	Att3	Att4	Att5	Bev1	Bev4	Bev5	Expert1	Expert2	Expert3	Expert4	Solve1	Solve2	Solve3	Solve4
Att1	.945[a]	-.337	-.219	-.226	.015	.145	-.129	.008	-.187	.002	.000	.037	.188	-.169	.027	-.109
Att2	-.337	.931[a]	-.556	.088	.016	-.153	-.048	.119	.014	.058	.032	-.051	-.105	.004	-.094	-.056
Att3	-.219	-.556	.932[a]	-.155	-.225	.044	-.002	-.038	-.057	-.071	-.083	.020	-.056	.017	.096	.159
Att4	-.226	.088	-.155	.947[a]	-.382	-.245	.047	-.037	.095	.083	-.157	.035	-.066	.091	-.071	-.075
Att5	.015	.016	-.225	-.382	.959[a]	-.034	-.014	-.113	-.044	.115	-.012	-.071	-.054	.034	.035	-.119
Bev1	.145	-.153	.044	-.245	-.034	.972[a]	-.154	-.039	-.085	-.035	.005	.059	-.068	-.082	-.152	-.046
Bev4	-.129	-.048	-.002	.047	-.014	-.154	.967[a]	-.307	.073	-.059	-.158	.098	-.017	.032	-.113	.024
Bev5	.008	.119	-.038	-.037	-.113	-.039	-.307	.959[a]	-.190	.077	.111	-.061	-.223	-.098	-.179	-.044
Expert1	-.187	.014	-.057	.095	-.044	-.085	.073	-.190	.971[a]	-.071	-.194	-.044	-.125	.094	-.031	.016
Expert2	.002	.058	-.071	.083	.115	-.035	-.059	.077	-.071	.932[a]	-.423	-.242	-.220	.116	-.075	-.089
Expert3	.000	.032	-.083	-.157	-.012	.005	-.158	.111	-.194	-.423	.948[a]	-.201	.060	-.065	-.065	-.036
Expert4	.037	-.051	.020	.035	-.071	.059	.098	-.061	-.044	-.242	-.201	.962[a]	.073	-.158	-.099	-.006
Solve1	.188	-.105	-.056	-.066	-.054	-.068	-.017	-.223	-.125	-.220	.060	.073	.936[a]	-.544	-.010	-.023
Solve2	-.169	.004	.017	.091	.034	-.082	.032	-.098	.094	.116	-.065	-.158	-.544	.933[a]	-.272	.028
Solve3	.027	-.094	.096	-.071	.035	-.152	-.113	-.179	-.031	-.075	-.065	-.099	-.010	-.272	.964[a]	-.273
Solve4	-.109	-.056	.159	-.075	-.119	-.046	.024	-.044	.016	-.089	-.036	-.006	-.023	.028	-.273	.970[a]

a. Measures of sampling adequacy (MSA)

Appendix 6: Exploratory Factor Analysis for Physical Environment Quality

6.A. Correlation matrix (physical environment quality)

	Room1	Room2	Room3	Enter1	Enter2	Enter3	Recre1	Recre2	Recre3	Dine1	Dine2	Dine3	Safe1	Safe2	Safe3	Safe4
Room1	1.000	.854	.453	.289	.417	.355	.294	.300	.374	.605	.563	.475	.407	.381	.413	.375
Room2	.854	1.000	.421	.225	.380	.347	.298	.308	.340	.609	.593	.526	.372	.387	.433	.337
Room3	.453	.421	1.000	.245	.329	.238	.278	.234	.318	.466	.413	.316	.239	.285	.312	.343
Enter1	.289	.225	.245	1.000	.733	.708	.550	.465	.488	.406	.421	.378	.393	.242	.304	.210
Enter2	.417	.380	.329	.733	1.000	.673	.534	.532	.550	.531	.561	.508	.451	.328	.412	.307
Enter3	.355	.347	.238	.708	.673	1.000	.670	.564	.501	.457	.419	.464	.441	.279	.399	.243
Recre1	.294	.298	.278	.550	.534	.670	1.000	.697	.534	.413	.396	.422	.399	.243	.369	.241
Recre2	.300	.308	.234	.465	.532	.564	.697	1.000	.750	.495	.480	.439	.459	.326	.391	.373
Recre3	.374	.340	.318	.488	.550	.501	.534	.750	1.000	.509	.492	.415	.536	.346	.425	.373
Dine1	.605	.609	.466	.406	.531	.457	.413	.495	.509	1.000	.680	.608	.550	.533	.497	.511
Dine2	.563	.593	.413	.421	.561	.419	.396	.480	.492	.680	1.000	.661	.498	.490	.449	.443
Dine3	.475	.526	.316	.378	.508	.464	.422	.439	.415	.608	.661	1.000	.497	.388	.396	.371
Safe1	.407	.372	.239	.393	.451	.441	.399	.459	.536	.550	.498	.497	1.000	.523	.556	.474
Safe2	.381	.387	.285	.242	.328	.279	.243	.326	.346	.533	.490	.388	.523	1.000	.589	.698
Safe3	.413	.433	.312	.304	.412	.399	.369	.391	.425	.497	.449	.396	.556	.589	1.000	.538
Safe4	.375	.337	.343	.210	.307	.243	.241	.373	.373	.511	.443	.371	.474	.698	.538	1.000

6.B. KMO and Bartlett's test (physical environment quality)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.901
Bartlett's Test of Sphericity	Approx. Chi-Square	2790.051
	df	120
	Sig.	.000

6.C. Anti-image correlation matrix (physical environment quality)

	Room1	Room2	Room3	Enter1	Enter2	Enter3	Recre1	Recre2	Recre3	Dine1	Dine2	Dine3	Safe1	Safe2	Safe3	Safe4
Room1	.835[a]	-.746	-.117	-.061	-.055	.003	.012	.089	-.070	-.083	-.002	.073	-.091	.051	.048	-.104
Room2	-.746	.819[a]	-.017	.150	.036	-.078	-.016	-.017	.039	-.105	-.151	-.142	.098	-.050	-.128	.123
Room3	-.117	-.017	.919[a]	-.013	-.042	.066	-.143	.145	-.119	-.168	-.076	.027	.121	.050	-.043	-.137
Enter1	-.061	.150	-.013	.873[a]	-.440	-.370	-.118	.105	-.100	-.017	-.077	.060	-.035	-.020	.069	.031
Enter2	-.055	.036	-.042	-.440	.929[a]	-.184	.033	-.042	-.084	-.050	-.155	-.087	.029	.025	-.077	.014
Enter3	.003	-.078	.066	-.370	-.184	.914[a]	-.302	-.077	.039	-.029	.121	-.100	-.050	-.001	-.085	.049
Recre1	.012	-.016	-.143	-.118	.033	-.302	.891[a]	-.459	.089	.041	.037	-.066	-.029	.026	-.075	.072
Recre2	.089	-.017	.145	.105	-.042	-.077	-.459	.847[a]	-.559	-.095	-.090	-.007	.052	.033	.036	-.143
Recre3	-.070	.039	-.119	-.100	-.084	.039	.089	-.559	.891[a]	-.016	-.028	.054	-.220	.037	-.051	.014
Dine1	-.083	-.105	-.168	-.017	-.050	-.029	.041	-.095	-.016	.965[a]	-.186	-.149	-.117	-.113	.005	-.085
Dine2	-.002	-.151	-.076	-.077	-.155	.121	.037	-.090	-.028	-.186	.943[a]	-.317	-.025	-.123	.020	.001
Dine3	.073	-.142	.027	.060	-.087	-.100	-.066	-.007	.054	-.149	-.317	.940[a]	-.157	.041	.042	-.039
Safe1	-.091	.098	.121	-.035	.029	-.050	-.029	.052	-.220	-.117	-.025	-.157	.941[a]	-.145	-.221	-.047
Safe2	.051	-.050	.050	-.020	.025	-.001	.026	.033	.037	-.113	-.123	.041	-.145	.883[a]	-.239	-.485
Safe3	.048	-.128	-.043	.069	-.077	-.085	-.075	.036	-.051	.005	.020	.042	-.221	-.239	.942[a]	-.152
Safe4	-.104	.123	-.137	.031	.014	.049	.072	-.143	.014	-.085	.001	-.039	-.047	-.485	-.152	.879[a]

a. Measures of sampling adequacy (MSA)

Appendix 7: Exploratory Factor Analysis for Outcome Quality

7.A. Correlation matrix (outcome quality)

	Food1	Food2	Food3	Carefree1	Carefree2	Carefree3
Food1	1.000	.898	.761	.479	.488	.594
Food2	.898	1.000	.857	.496	.515	.586
Food3	.761	.857	1.000	.483	.521	.599
Carefree1	.479	.496	.483	1.000	.703	.770
Carefree2	.488	.515	.521	.703	1.000	.824
Carefree3	.594	.586	.599	.770	.824	1.000

7.B. KMO and Bartlett's test (outcome quality)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.803
Bartlett's Test of Sphericity	Approx. Chi-Square	1477.561
	df	15
	Sig.	.000

7.C. Anti-image correlation matrix (outcome quality)

	Food1	Food2	Food3	Carefree1	Carefree2	Carefree3
Food1	.786[a]	-.730	.088	.041	.107	-.217
Food2	-.730	.723[a]	-.594	-.084	-.091	.127
Food3	.088	-.594	.848[a]	.045	-.008	-.166
Carefree1	.041	-.084	.045	.886[a]	-.178	-.434
Carefree2	.107	-.091	-.008	-.178	.833[a]	-.583
Carefree3	-.217	.127	-.166	-.434	-.583	.790[a]

a. Measures of sampling adequacy (MSA)

Appendix 8: Exploratory Factor Analysis for Social Factors

8.A. Correlation matrix (social factors)

	Crew1	Crew2	Crew3	Crew4	Pass1	Pass2	Pass3	Density1	Density2	Density3	Density4
Crew1	1.000	.895	.736	.634	.446	.483	.438	.427	.454	.450	.394
Crew2	.895	1.000	.776	.677	.467	.485	.453	.420	.491	.466	.428
Crew3	.736	.776	1.000	.760	.449	.498	.482	.421	.486	.469	.433
Crew4	.634	.677	.760	1.000	.509	.577	.518	.454	.542	.520	.484
Pass1	.446	.467	.449	.509	1.000	.762	.701	.438	.509	.519	.496
Pass2	.483	.485	.498	.577	.762	1.000	.823	.421	.476	.504	.496
Pass3	.438	.453	.482	.518	.701	.823	1.000	.428	.488	.515	.513
Density1	.427	.420	.421	.454	.438	.421	.428	1.000	.840	.635	.664
Density2	.454	.491	.486	.542	.509	.476	.488	.840	1.000	.743	.777
Density3	.450	.466	.469	.520	.519	.504	.515	.635	.743	1.000	.935
Density4	.394	.428	.433	.484	.496	.496	.513	.664	.777	.935	1.000

8.B. KMO and Bartlett's test (social factors)

KMO and Bartlett's Test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.861
Bartlett's Test of Sphericity	Approx. Chi-Square	2863.781
	df	55
	Sig.	.000

8.C. Anti-image correlation matrix (social factors)

	Crew1	Crew2	Crew3	Crew4	Pass1	Pass2	Pass3	Density1	Density2	Density3	Density4
Crew1	.826[a]	-.747	-.117	.024	.026	-.093	.031	-.156	.092	-.145	.138
Crew2	-.747	.831[a]	-.261	-.101	-.072	.051	-.007	.117	-.115	.067	-.065
Crew3	-.117	-.261	.916[a]	-.450	.036	.039	-.094	-.011	5.306E-5	-.003	-.002
Crew4	.024	-.101	-.450	.921[a]	-.001	-.194	.042	.036	-.127	-.087	.065
Pass1	.026	-.072	.036	-.001	.927[a]	-.413	-.155	.009	-.100	-.106	.077
Pass2	-.093	.051	.039	-.194	-.413	.849[a]	-.582	-.016	.063	.048	-.065
Pass3	.031	-.007	-.094	.042	-.155	-.582	.889[a]	-.009	-.015	-.004	-.050
Density1	-.156	.117	-.011	.036	.009	-.016	-.009	.853[a]	-.670	.020	-.031
Density2	.092	-.115	5.306E-5	-.127	-.100	.063	-.015	-.670	.864[a]	.001	-.249
Density3	-.145	.067	-.003	-.087	-.106	.048	-.004	.020	.001	.822[a]	-.847
Density4	.138	-.065	-.002	.065	.077	-.065	-.050	-.031	-.249	-.847	.807[a]

a. Measures of sampling adequacy (MSA)